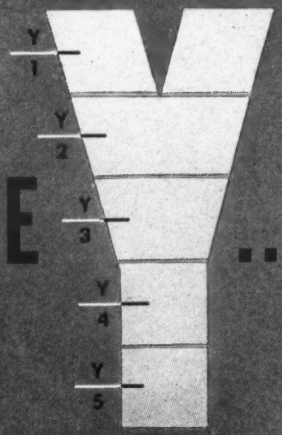
THE

DENTAL Digest

NOVEMBER 1944

USE THE Y...TO SEE THE R



"Contrast-comparison" is merely a method to project or emphasize visually the color or the color-saturation of a tooth.

The reddish cast in a tooth, for example, becomes visible and readily discernible when compared to a tooth not having such a tinge of red.

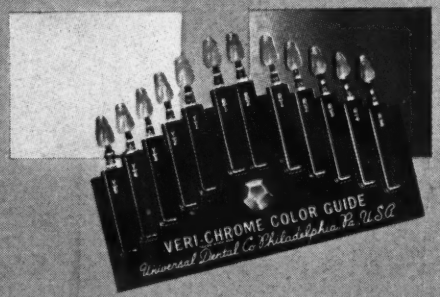
The same principle is carried a step further to distinguish between the different intensities of saturations of the tooth color.

In Fig. 1 it is obvious that the tooth is less saturated than Y4 and more saturated than Y2... thereby matching the tooth to Y3.

You can see that the Veri-chrome procedure for determining hue and saturation of tooth colors is extremely simple and quick. *Results are magnificent!*

Tooth color selection by *contrast-comparison* is possible only with the Veri-chrome Color Guide because of its systematic arrangement of the hues in progressive saturations . . . and controlled color brilliance.

Your Universal dealer will be glad to send you our brief illustrated brochure describing the Veri-chrome system for tooth color selection.



COLOR SATURATIONS SHOWN HERE INTENSIFIED FOR EASIER PERCEPTION

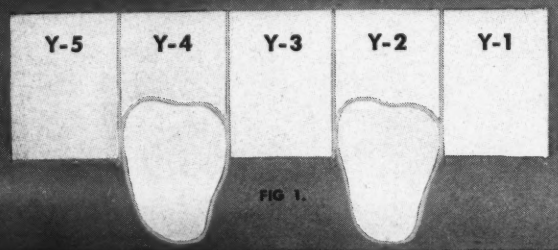


FIG 1.

Veri-chrome

tooth colors now available in

FIVE-PHASE ANTERIORS DR. FRENCH'S POSTERIORS *(new carvings)*
NUFORM ANTERIORS AND POSTERIORS

JUSTI RESEARCH Suggests:

re about the new DENTA PEARL CYCLO-MOLD Teeth.

injection molding process produces:—

a. The hardest, densest, strongest, plastic tooth possible.

b. The perfect blending of an injection molded tooth—heretofore impossible.

c. Physically perfect teeth free from undetectable defects frequent in compression molding.

process itself involves five separate operations:—

a. Pigmentation and blending of powder into preheated mold reservoir.

b. Mold, reservoir heated and engaged by injection machine.

c. Pressure exerted, mold is cooled, ejected.

d. Mold is "broken" and teeth removed.

e. Inspection finishing and carding of teeth.

first all-plastic shade guide will be available for use with DENTA ARL Teeth and FLUORESCENT ACRYNAMEL. This now standardizes des of:—

a. DENTA PEARL CYCLO-MOLD Teeth.

b. Direct Match FLUORESCENT ACRYNAMEL.

c. N.H. and D.P. 61-63-65-66-67-69-73-77-81-85.

plastic object can be safely and efficiently sterilized by a tion of Zephiran Chloride by Cook Waite. It is recommended for ilization of the combination DENTA PEARL — ACRYNAMEL de Guides.

RYVELUM cases should be cleaned only with non-chemical nsers such as Bon Ami or soap.

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HARDER . . .

DENTA PEARL "Cyclo-Mold" teeth have greater resistance to wear and abrasion than ever. They are the hardest acrylic teeth made.

DENSER . . .

The perfect, dense structure—from the extreme outer surface to the core—of every DENTA PEARL tooth offers complete assurance of strength no matter how much they are ground. These teeth will take and retain a high, lustrous polish.

INJECTION MOLDED . . .

The exclusive "Cyclo-Mold" machine—designed and built by Justi engineers—injects pure methyl-methacrylate into metal molds under controlled pressure. This results in maximum density and hardness, absolutely uniformity.

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handy, all-plastic shade guide serves for DENTA PEARL teeth and FLUORESCENT RYNAMEL. It standardizes:

DENTA PEARL CYCLO-MOLD TEETH

Premixed, direct match ACRYNAMEL

N. H.—D. P. 61, 63, 65, 66, 67, 69, 73, 77, 81, 85 shades.

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THE DENTAL Digest

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THE DENTAL Digest

VOL. 50 NO. 11

NOVEMBER 1944

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About Our CONTRIBUTORS

WALTER C. HARBART, D.D.S. (University of Southern California, College of Dentistry, 1924) is a general practitioner. Doctor Harbart is the inventor of a number of dental instruments, one of which is an interchangeable water-cooled impression tray. He describes here his method of making an immediate acrylic bridge.

LIEUTENANT COLONEL JAMES MEYER MULLEN (DC) AUS received his D.D.S. at the University of Pittsburgh, School of Dentistry, in 1917. Colonel Mullen has done extensive research in toothache in flying personnel for over two years. He reviews the findings of previous studies; and presents the types, causes, treatments, and preventive measures of aerodontalgia.

PHILLIP M. CHERNOFF, D.D.S. (The Thomas W. Evans Dental Institute, University of Pennsylvania, 1922) is in general practice. He has written several articles for us, the last being RAPID ALINEMENT OF SINGLE MALPOSED TEETH which appeared in August. This month he discusses the SURGICAL CORRECTION OF DENTOFACIAL DEFORMITIES.

ROSALIE CARTER, D.D.S. (Vanderbilt University Dental School, 1924) is in general practice. Doctor Carter presents the principles and technique of the ionization method of root canal therapy.

GEORGE RUSSELL WARNER, M.D., D.D.S. (Gross Medical College, Denver, and University of Colorado, College of Dentistry, 1898) was for ten years an instructor in oral diagnosis and roentgenography in the University of Denver Dental School. Doctor Warner has contributed numerous articles to the dental literature. He is a department editor of ORAL HYGIENE. He reports here a method of bleaching mottled dental enamel.

A Simple, Accurate Technique for Immediate Acrylic Bridges

WALTER C. HARBART, D.D.S., Los Angeles

DIGEST

A method is described for making an anterior acrylic bridge to reproduce the size and contour of the natural teeth.

FOR PURPOSES of specific illustration, it is proposed to replace both upper central incisors, with acrylic pontics attached to three-quarter crowns on both laterals.

Technical Procedure.

1. Prepare both abutments, and finish the castings without extracting the teeth to be replaced.

2. With the abutment castings in place in the mouth, take an alginate impression and set it aside in an isotonic solution for future use. *Do not pour a model.* This impression is not for soldering; it is for making the pontic patterns later.

3. Cut a small key slot at the mesial contact point of each abutment casting with a Joe Dandy disc (Figs. 1A and 1B). These slots provide seats for setting the castings into a plaster impression, and likewise provide stronger and neater soldered union. It is a desirable practice to cut such key slots whenever it is necessary to take accurate impressions of fixed bridge abutments which do not have angular anatomy.

4. Replace the abutment castings in the mouth and take a plaster impression.

5. Seat the abutment castings carefully into the dry plaster impression and seal them to place with baseplate wax. Apply a separating medium and pour a stone model.

6. Using a large fissure bur, cut away the lingual portions of the stone model of the teeth to be extracted and replaced (Figs. 2A and 2B). This establishes the position of the skeletal bar in relation to the outer surface of the acrylic pontics (Figs. 3A and 3B).

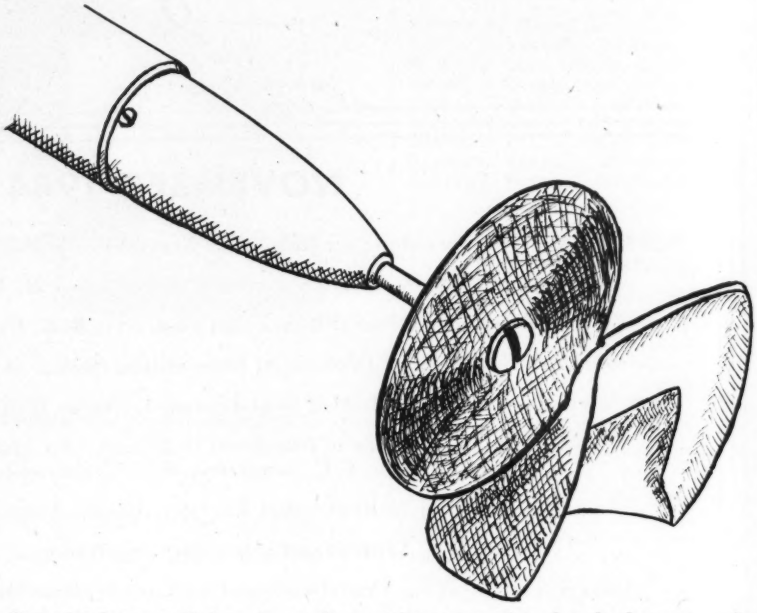


Fig. 1A—Cut a small key slot at the mesial contact point of each abutment casting with a Joe Dandy disc.

7. Lubricate the recess cut in the stone model, and construct a wax pattern for the pontic skeletal bar. Carry the wax pattern into the key slots (Figs. 1A and 1B) to form lugs in the casting.

8. Cast the skeletal bar in gold and fit it to the abutments. If the key slots and corresponding cast lugs have been made properly, the fit will be accurate and no investment will be required for soldering.

9. Prepare the contact points for soldering the bar to the abutments by trimming the stone away from around the solder joint (Figs. 3A and 3B). A minimum of solder will produce a strong union without filling the embrasures.

10. Solder the three units together and remove the soldered assembly from the stone model. Clean and polish the assembly, and fit it into the alginate impression which has been kept in the isotonic solution. It may be necessary to trim the alginate impression slightly to accommodate the soldered contacts.

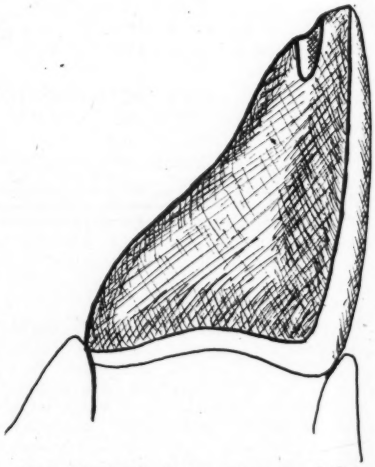


Fig. 1B—Sagittal view of prepared three-quarter crown in place on tooth.

11. Secure the cast assembly into

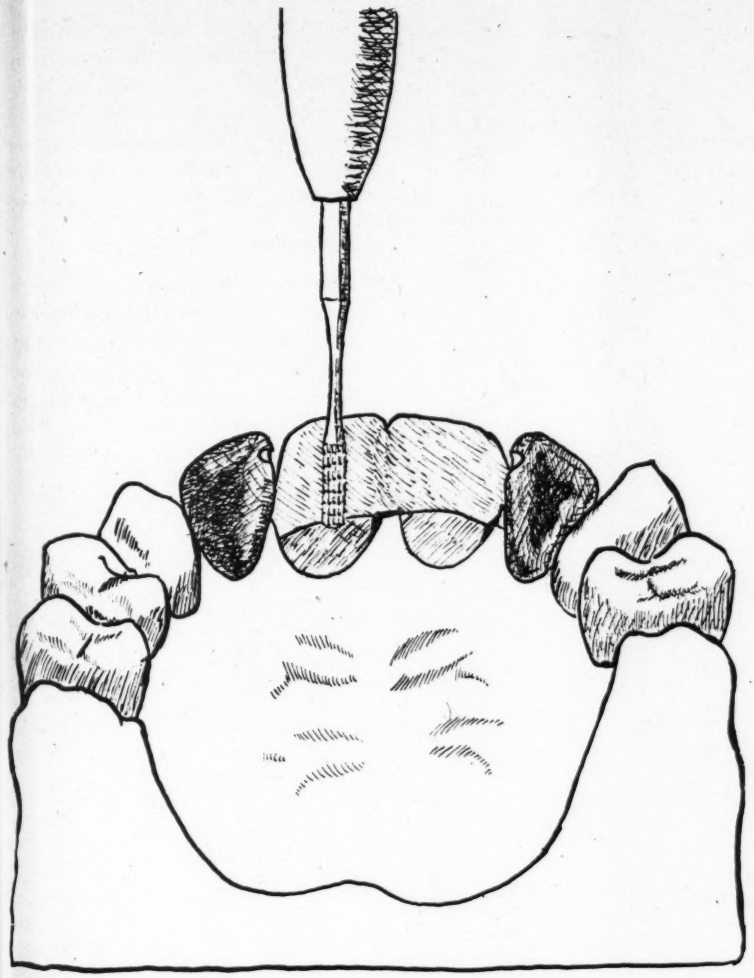


Fig. 2A—Using a large fissure bur, cut away the lingual portions of the stone model of the teeth to be extracted and replaced.

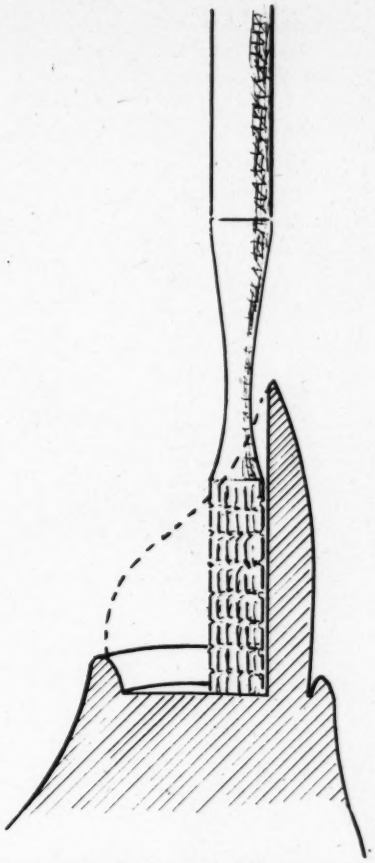


Fig. 2B—Sagittal view showing extent of lingual portions cut away from stone model.

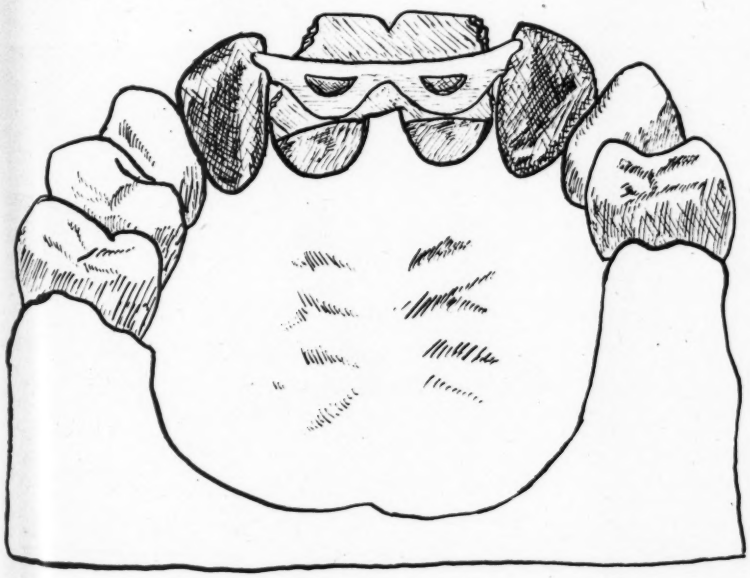


Fig. 3A—Cast gold skeletal bar set into key slots, and distal angles of central incisors broken away to facilitate soldering.

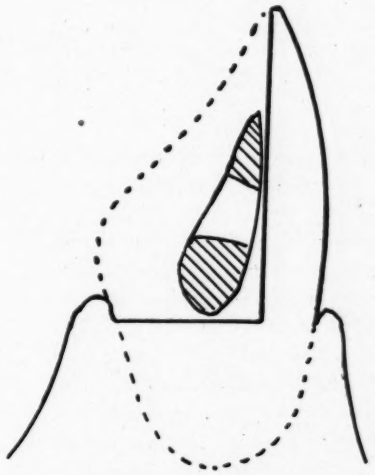


Fig. 3B—Sagittal view of position of skeletal bar in cut-out portion, and of position of bar in finished pontic (dotted lines).

its seat with plain pins stuck through the labial rim of the impression material (Fig. 4A).

12. The wax pattern for the pontics is made by flowing hot inlay wax

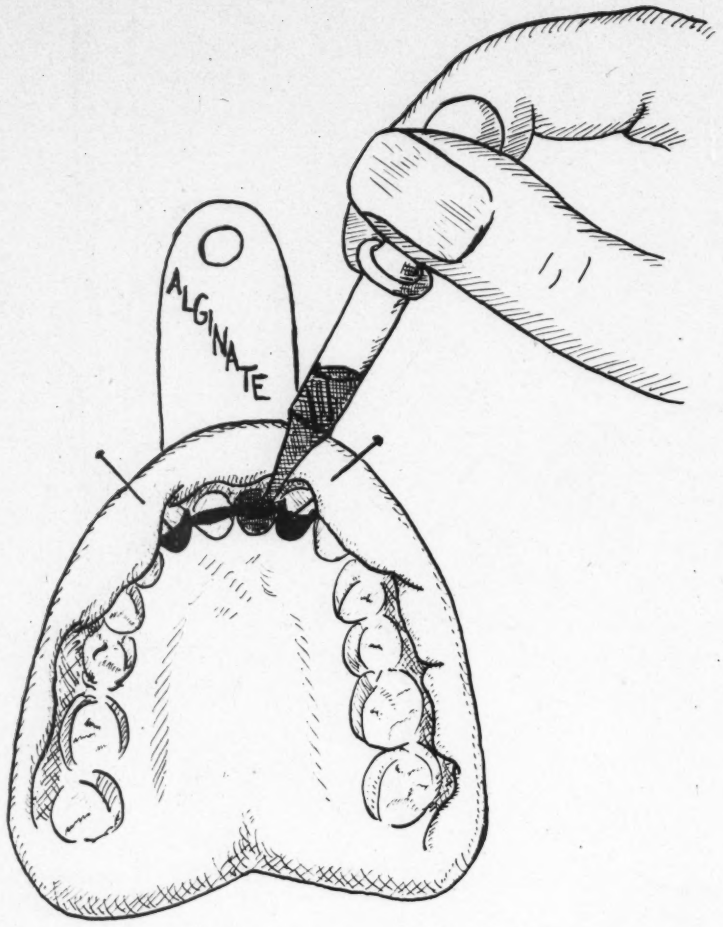


Fig. 4A—Cast assembly secured in place with pins stuck through labial rim of impression material. Flow hot inlay wax from medicine dropper around skeletal bar and into impressions of teeth (to be extracted) to make wax pattern for pontics.

from a medicine dropper around the skeletal bar and into the impressions of the teeth to be extracted (Fig. 4B). It is best to dry the impression with air before pouring the hot wax. The impression should be filled at least to the gingival margin and allowed to cool.

13. Remove the gold and wax assembly from the impression, and add wax to form the root portions of the pontics (dotted line in Fig. 4B). These root tips should be made somewhat oversize, and trimmed and polished later. Corrections and esthetic modifications in the wax pattern, if necessary, should be made at this stage.

14. Processing of the acrylic resin from this point on is carried out in the usual manner.

15. When the teeth are extracted, the bridge should be set temporarily with an oily cement such as Medi-Cement. When the sockets are healed sufficiently, the temporary cement should be cleaned off thoroughly before the bridge is polished and set.

Comments

Inasmuch as the acrylic pontic is an exact duplicate of the original natural teeth, wax sculpturing and model articulating are unnecessary. All guessing is eliminated in establishing the position of the skeletal bar within the body of the acrylic pontic.

727 *West Seventh Street.*

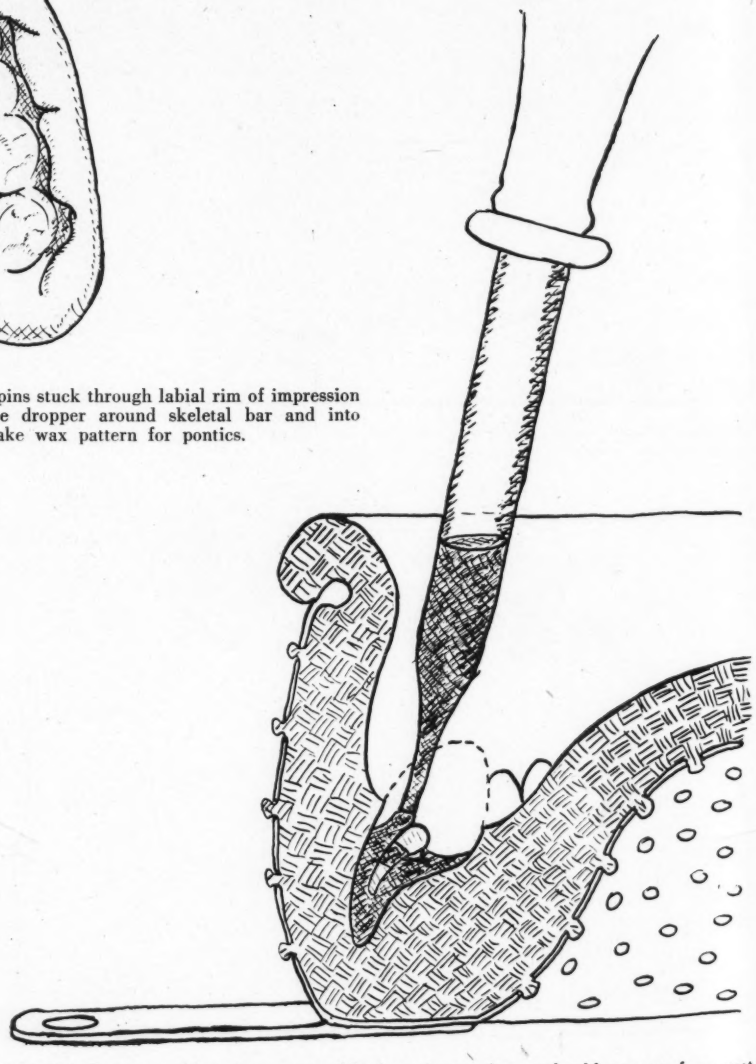


Fig. 4B—Remove gold and wax assembly from impression, and add wax to form root portions of pontics (dotted line).

Toothache and the Aviator

LIEUTENANT COLONEL JAMES M. MULLEN (DC) AUS

DIGEST

Teeth with degenerated pulps, pathologic conditions of the root ends, extensive caries, and exposed cementum, apparently cause toothache in aviators subjected to high altitude flying. These toothaches develop at altitudes from 7,000 feet to 38,000 feet and appear to be caused primarily by expansion of gases and temperature changes.

The nature of the histologic structures of the teeth allows little compensation for circulatory or gaseous volume changes within the confined area of the pulp chamber, root canal, or apical alveolar structure. Great care should be exercised in determining the pulp conditions present in teeth previous to any restorative procedure especially for those which may be subjected to rapid atmospheric pressure changes. Pain of dental origin, as revealed in the decompression chamber, at times may assist in disclosing hidden degenerative or carious processes affecting the normal functioning of a flyer under certain conditions of varying altitudes. Aviators suffering pain in the region of the maxilla when flying in low pressure altitudes may not realize the dental origin of their discomfort and may attribute it to a maxillary sinusitis. Heat production while drilling is considered likely to cause damage to the tissues of the pulp of a tooth, thus causing it to be affected more readily by high altitude flying.

The dental problems of flying personnel have been studied during the last few years by members of the Dental Corps and the Medical Corps; however, more study and research regarding aerodontalgia must be made. The dental profession has an opportunity to show its initiative, resourcefulness, and vision regarding this interesting branch of aviation medicine.

Findings of Previous Studies

Toothache in the air, or aerodontalgia,[1] has been recognized for several years by people who have suffered from it. Drefus,[2] in 1937, mentioned a case of subacute pulpitis which was aggravated on ascent to 6,100 feet. The treatment of this consisted of a pulpectomy of the offending lower first molar with apparently good results. The same year, Armstrong and Huber[3] stated: "The teeth are normally subjected to three distinct abnormal variations in environment during high altitude flights: decreased barometric pressures, low oxygen percentages, and lowered atmospheric pressures." The conclusions reached were that environmental conditions encountered at altitudes between 10,000 feet and 40,000 feet have no deleterious effect on human teeth or dental restorations.

Ordinary flight has no effect on the normal tooth pulp. It has been found, however, that about 2 per cent of all flying personnel develop some type of aerodontalgia during a decrease in atmospheric pressure from 7,000 feet to 38,000 feet where the atmospheric pressure is one fifth of that at sea level. This percentage has been checked fairly accurately in the low pressure chamber.

Types of Aerodontalgia

1. Etiology of *pulsating* or *dull throbbing pain*:
   a) Degenerated gangrenous pulps.
   b) Pathology at apexes of teeth.
   c) Periodontal pockets with insufficient drainage.
2. Etiology of *sharp intermittent pain*:
   a) Pulpitis.
   b) Dental caries not involving the pulp.
   c) Defective restorations.
   d) Large metal restorations without cement bases.
   e) Residual air spaces under restorations.

Causes of Odontalgia

Toothaches in flight are caused primarily by changes in atmospheric pressure and temperature, and vary in duration and severity. T. V. Joseph and his colleagues[4] determined that the incidence of aerodontalgia among personnel exposed to artificially lowered pressure in a low pressure chamber was about 1.2 per cent. They gave three possible causes for the pain: (1) The reaction of vital pulps of carious teeth to the change in atmospheric pressure; (2) the reaction of degenerated gangrenous pulps to the change in atmospheric pressure; and (3) the presence of a faulty inlay with a small underlying residual air space.

Severe toothache occurs in teeth with degenerated gangrenous pulps and in teeth showing radiographic evidence of a periapical pathologic condition. Relief is obtained by making an opening into the pulp chamber

[1]Mitchel, D. I.: Aerodontalgia, U. S. A. Med. Bull., 73:62-67 (February) 1944.
[2]Drefus, H.: Les Dents des Aviateurs, L'Odontologie, 75:612-613, 1937.
[3]Armstrong, H. G., and Huber, R. E.: Effect of High Altitude Flying on Human Teeth and Restorations, THE DENTAL DIGEST, 43:132 (March) 1937.
[4]Joseph, T. V.; Gell, C. F.; Carr, R. M.; and Shelesnyak, M. C.: Toothache and the Aviator, U. S. N. Med. Bull., 41:643-645 (May) 1941.

of the tooth and allowing the gases to escape.

The laws governing the behavior of gases apply to gases within the body as well as those outside the body. The expansion of the gases within the pulp chamber of a tooth and localized areas at root ends is the result of a reduced pressure, and gives rise to severe toothache during high altitude flights. During flight the escape of gases from within the pulp chamber or from localized areas at root ends is impossible, so the aviator must tolerate his toothache until he returns to a relatively normal atmospheric pressure under 10,000 feet, when the toothache eases or almost disappears.

Henry's law states that the quantity of a gas physically dissolved by a liquid varies directly with the pressure, the temperature remaining constant. This law is in operation in the body at high altitudes. Under one atmosphere of pressure, the body fluids dissolve approximately 1 liter of nitrogen gas. The symptoms resulting from the formation of bubbles of this gas at high altitudes may be completely disabling. This condition is known as aeroembolism, bends, or decompression sickness. It would seem that patients with aeroembolism may develop toothache due to arteriolar constriction, or may develop a more deleterious effect on the pulp, inasmuch as the pulp is surrounded by a dense, unyielding wall of dentine which cannot "bend" to accommodate the change.

Knisely[5] presented a theory with reference to the occurrence of aeroembolism in decompression cases. He suggested that subjects experiencing aeroembolism may have prolonged spasms of the arterioles of the connective tissues and smooth muscles which completely shut off the blood supply to the involved area for some time.

Mitchel[1] reports that the arteriolar constriction which causes local anoxia must be considered a potential cause of aerodontalgia. He states the effects of decreased pressure as follows: "Nitrogen is a relatively fat soluble. Areas of poor vascularity are affected sooner by nitrogen bubble formation than are the more vascular areas. The dental pulp is surrounded by hard unyielding walls of dentine and there is no collateral circulation. The periapical region of a tooth is composed chiefly of a cancellous bony matrix, and in the congestion of inflammation the blood supply is increased but is relatively static."

Nitrogen bubbles might be released in the area from the blood and tissues when subjected to a sudden decrease in atmospheric pressure, and the slowed, congested circulatory system of the area may not be able to relieve the condition promptly. Bubbles may be formed to compress the nerves of the vessel walls or the dental nerve itself, thereby causing pain. The mere formation and expansion of a bubble within or without a vessel might, by compression of local nerve tissue, cause a compensatory contraction of the vessels and, with this, start a vicious cycle resulting in local tissue starvation.

A large amalgam restoration frequently permits thermal changes to be registered on the pulp, which in turn could initiate a fatty degeneration in or around this vital dental tissue. If a fatty degeneration were in progress, an increased amount of nitrogen in solution would be evident. The confinement of the bubbles within the nonyielding structure could cause the pain easily by the impingement of pulp tissue. A temporary tissue anoxia thus produced might result in pain as well as a more prolonged deleterious effect on the pulp. If repeated, the pulp might eventually degenerate. According to Armstrong,[3] "gas released in the tissue appears to cause pain when confined within unyielding tissues such as bone (as in the periapical region), tendons, fascia, and nerve sheaths. Surely the dentine surrounding a root canal could be included in this category."

Harvey[6] stated in a recent article that many of the toothaches that came under his observation were due to recent restorations in teeth. This suggested that the heat produced while preparing a cavity was one of the factors which should be investigated. He recorded temperatures of vital teeth under normal conditions and under conditions similar to high altitude flying. He recorded temperatures of vital teeth while drinking hot and cold liquids, and while an amalgam restoration was drilled out of a tooth with intentional ruthlessness designed to reproduce the conditions of thoughtlessness, indifference, or callousness which sometimes exist in practice, especially when local anesthesia, general anesthesia, or analgesia is employed. He found that heat caused greater damage to the tissues of the pulp than cold conditions of high altitude flying.

Inasmuch as teeth are normally adequately insulated by the lips, cheeks, and tongue when the mouth is closed, it was considered unlikely that there would be more than a slight change in tooth temperature with full nasal breathing at high altitude. In an airplane, oral breathing may not be prevented for several reasons, such as exertion and the use of the intercommunicating telephone system; but even in this case the lips, cheeks, tongue, and saliva, provide good protection against cold and only a slight change in temperature might be expected to occur in teeth. Teeth with early pulpitis, leaky or otherwise defective restorations, large metal restorations without cement bases, and exposed cementum, are such common offenders in cold weather that it is to be expected that exposure to cold at high altitudes would cause pain under these conditions.

A great difference in the severity of periodontoclasia and necrotic gingivitis between nonflying and flying personnel is evident. From 15,000 feet upward, many of the flying personnel develop a hyperemia of the gums and a sense of fullness, pain, and bleeding which may be due either to high altitude pressure or change in temperature. The bleeding subsides upon descent to 10,000 feet and under.

[5]Knisely, M. H.: Personal communication to Captain D. I. Mitchel, January, 1943.

[6]Harvey, Warren: Tooth Temperature with Reference to Dental Pain While Flying, Brit. D. J., 73:221-226 (November 5) 1943.

Case Histories

Case I—A pilot developed a sense of fullness with a dull toothache in the upper left cuspid area at 10,000 feet. The toothache could be relieved temporarily by applying pressure on the cuspid tooth or by moving it; but at 24,000 feet the pain developed into a throbbing ache which was unbearable. The pilot descended and the pain subsided beneath 10,000 feet; after landing, however, he still noticed a sense of fullness with no pain. He reported to the dental clinic where he was given a routine examination including full mouth radiographs and vitality tests. The radiographs showed a radiolucent area at the apex of the root of the upper left cuspid, and the vitality test proved negative. The offending tooth was extracted and the pilot had no more discomfort at high altitudes.

Case II—A command pilot complained of a general tired and languid feeling. When flying at about 10,000 feet, he experienced a sense of fullness and all his teeth ached. As he ascended to 20,000 feet, the toothache became a dull throbbing pain and he developed a pronounced headache. Under 10,000 feet, the teeth stopped aching and the headache became less severe. Radiographs revealed large radiolucent areas at the apexes of two molars and a bicuspid. Two devitalized teeth were found to have defective root canal fillings and breaking down of the periodontal membrane and thickening of the lamina dura. All infected and devitalized teeth were extracted. After two weeks of rest, the pilot began to gain weight and experienced no more discomfort while flying at high altitudes. The pilot had been physically below normal as a result of the toxins he was constantly absorbing from the infected teeth.

Case III—A pilot complained of a dull throbbing pain in the upper left maxillary region at 12,000 feet; the pain became more pronounced as he ascended. Upon descending, the pain disappeared at approximately 10,000 feet. Radiographs revealed extensive resorption of the distobuccal and mesiobuccal roots of the upper left second molar. The vitality test was positive, denoting some vitality in the tooth. The tooth was extracted and a degenerating pulp with vital tissue in the lingual root was found. The buccal roots were both gangrenous. The maxillary sinus was radiographed and found to be normal. The pilot had no more discomfort after extraction of this tooth.

Case IV—A pilot complained of sharp pain in the right mandibular region at 10,000 feet, increasing to a jumping toothache as he ascended. When he descended below 10,000 feet, the toothache would stop. Several large old metal restorations were found, one of which was defective. All suspicious restorations were removed, and amalgam restorations with adequate cement bases were inserted. All discomfort disappeared after two weeks.

Case V—A pilot ascended from a temperature of 105° C. to a temperature of 20° C. at 20,000 feet, and complained of a sharp jumping toothache in the left mandibular region; as he ascended, the pain increased in severity. The toothache would subside on descent, and disappear below 10,000 feet. All teeth appeared normal radiographically and clinically, so the conclusion was that the toothache came from the sudden change in temperature producing thermal shock.

Case VI—A crew member developed a sense of fullness and severe pain in the lower left bicuspid region at 15,000 feet. As he ascended, the pain became less severe, and at 38,000 feet all pain disappeared. Radiographs revealed that the offending tooth was normal; however, a metallic restoration with a cement base had recently been inserted.

The following cases were recorded in the low pressure (decompression) chamber by members of the Altitude Training Unit. The chamber is a large tanklike structure composed of armor plate steel with several reinforced glass portholes for observation, and is operated at room temperature. It holds eighteen passengers and two crew members, and is about 20 feet long, 10 feet wide, and 8 feet high. Routine "flights" are made as high as 38,000 feet, and at 18,000 feet to 20,000 feet anoxia demonstrations are held. Oxygen is administered at 10,000 feet. The chamber is equipped with the "demand oxygen system," an automatic system of oxygen supply.

Case VII—A passenger developed a sharp intermittent toothache in the upper left first molar at 10,000 feet. At 20,000 feet the pain was unbearable, and the passenger had to be removed from the chamber and recompressed in the safety lock. The pain subsided at 10,000 feet. A large amalgam restoration was found in the tooth which had ached, and the absence of a cement base was noted upon removal of the restoration. A metallic restoration with a cement base was inserted, and the patient had no recurrence of the toothache.

Case VIII—A crew member developed a sharp pain in the upper right lateral incisor at 7,000 feet. The pain appeared to subside as the pressure decreased, but at 16,000 feet the pain started again and became sharp and unbearable. The crew member was removed from the chamber and recompressed in the safety lock. A large, loose silicate restoration was found in the lateral incisor. It was replaced by a silicate restoration with a cement base, and the patient had no more discomfort.

Case IX—A crew member developed a throbbing pain in the left lateral incisor and left molar regions of the maxilla at 10,000 feet. At 15,000 feet the toothache became more pronounced, and the crew member was taken from the chamber and recompressed in the safety lock. Radiographs revealed extensive radiolucent areas at the root end of the left lateral incisor and the root ends of the upper left first molar. The infected teeth were extracted, and the patient had no more discomfort.

It was found that slightly over 2 per cent of the personnel taking the altitude "flights" developed toothache. Fifty per cent of the personnel developed toothache during ascent between 10,000 feet and 38,000 feet. Sixteen per cent developed definite toothache at 38,000 feet; 10 per cent developed an unbearable toothache at 38,000 feet; 16 per cent developed toothache on ascent, but it disappeared at 38,000 feet; and 8 per cent were normal to 38,000 feet but developed toothache on descent.

Prevention of Aerodontalgia

It has been possible to prevent almost all serious toothache in flying personnel. An outline of the procedure follows:

1. Diagnosis:
   a) Clinical examination with aid of mouth mirror and explorers.
   b) Complete radiographic study.
   c) Vitality tests.
   d) Percussion.
   e) Transillumination.
   f) Low pressure "flight" tests.
2. Treatment:
   a) Removal of all teeth showing periapical involvement.
   b) Removal of teeth revealing degenerative processes of the pulp, except anterior teeth where root treatment is indicated.
   c) Removal of teeth showing extensive loss of alveolar bone due to periodontoclasia.
   d) Restoration of all carious areas by metallic or porcelain restoration materials over an adequate cement base.
   e) Replacement of defective restorations.

f) Replacement of large metallic restorations without adequate cement bases.

g) Use of minimum amount of metallic restoration material with proper preparation and retention.

3. Additional Preventive Measures:

a) Radiographic study of all personnel on flying status.

b) Vitality tests.

c) Prevention of injury during operative procedures by the use of sharp burs and hand instruments, and water in drilling.

d) Adequate lining material under all permanent restorations.

e) Examination of occlusion and elimination of unusual occlusal stress.

A cement base of oxyphosphate of zinc cement is used in the average cavity. In all cases of pulpitis due to large metal restorations or extensive caries, zinc oxide and eugenol is used and the patient is observed for several weeks. If the tooth appears normal after that time, a permanent restoration is inserted.

Fractures of Facial Bones

B. K. BANK, M.D.

THE UPPER facial region is of special importance to air force medical officers because of upper facial injuries from the direct violent impact of the pilot against the cockpit cowling or instrument panel in airplane crashes.

Facial Skeleton

The facial skeleton is well adapted in a protective capacity not only to the eyes but to the base of the skull. The orbital ridges, the malar prominences, and the tooth-bearing maxillary alveolar process, are of strong thick bone, but between and beneath these are masses of flimsy, easily crushable plates about the nasal cavity and its accessory sinuses. These masses of flimsy bone act as cushions or shock absorbers so that, in direct violence, the stronger prominences which take the impact are not primarily comminuted, but are displaced as whole masses or are telescoped and impacted into the deeper bony elements which are crumpled and comminuted.

Facial Fractures

The possible fractures of the upper part of the face may seem protean, but they can be classified in terms of the direction and degree of violence and of the local anatomy as follows:

1. Frontal violence fractures, in which the nasomaxillary region takes the brunt.

2. Lateral violence fractures, in which the malar-maxillary region is involved chiefly.

3. Combinations of both.

The three degrees of nasomaxillary impaction are differentiated as:

1. Local fractures about the external nasal skeleton.

2. Gross comminutions of the internal nasal bones with collapse of the entire nasal block ("dish face" deformity).

3. Nasomaxillary fractures associated with fractures of the base of the skull.

Treatment

Upper facial fractures are overlooked easily. In the presence of an injury to the face or head the question of fracture should always be considered. Roentgenograms should be taken whenever such fractures are suspected, but the diagnosis can and should be made early by careful clinical examination without primary reliance on roentgenograms.

If reduced early and adequately, the fractures generally stay reduced without elaborate retentive mechanisms. If the fractures are not reduced, however, they may become irreducible and fixed in malposition. No amount of remote plastic surgery or camouflage can ever compensate for misplaced or malunited facial bones. The first two weeks is the critical period for facial injuries; only in that period can proper reduction be effected easily. Elaborate splints and retentive apparatus are not usually required if reduction is effected early. Most of the more elaborate devices are for use when reduction has not been effected in the critical period because of neglect or contraindications.

Among the contraindications to early manipulation are: fracture of the base of the skull or anterior fossa, cerebrospinal rhinorrhea, intracranial septic conditions, intracranial injuries, infection of lacerated tissue, and unfavorable anesthetic facilities.

From the second week to about three months after injury, manipulation in itself is not effective to obtain reduction good enough for immediate fixation, but slow traction can do this.

—From Abstracts from Current Literature, *War Medicine*, 6:109 (August) 1944.

Surgical Correction of Dentofacial Deformities

PHILLIP M. CHERNOFF, D.D.S., Middletown, Connecticut

DIGEST

A technique is described for the surgical resection of an abnormally developed alveolar structure to correct the extreme protrusion of the upper anterior teeth and the resultant facial deformity.

Deformity Due to Abnormal Alveolar Development

Many cases of facial deformity that result from inharmonious jaw relationships can be corrected by surgery. A common condition is the extreme protrusion of the upper anterior teeth, preventing closure of the lips (Figs. 1 and 2). In such cases there is usually a considerable space between the incisal edges of the upper and lower anterior teeth when the posterior teeth are in occlusion (Fig. 3). The patient presenting this condition is perforce a mouth breather, and usually has a short, underdeveloped upper lip as a consequence of lack of functional stimulation.

The etiology of this type of malocclusion and facial deformity will not be considered here inasmuch as the sole purpose of this article is to point out the excellent results that can be achieved by surgical correction. The protrusion of the incisors in such cases is not due to a tilting of the teeth, but is due rather to an abnormal development of the alveolar process. The purpose of surgery, therefore, is to remove that section of the alveolar process that is not in harmony with the size or shape of the opposing jaw. Figures 1, 2, and 3 show the appearance of a patient before operation. Figure 4 shows the result after operation. A comparison of Figure 4 and Figure 3 will demonstrate how effectively a surgical procedure can bring into harmony the relative position of an abnormal

Fig. 1—Extreme protrusion of upper anterior teeth preventing closure of lips. Protrusion due to abnormal development of alveolar process.

Fig. 2—Profile view of Figure 1.

alveolar protrusion. Note also in Figure 4 that the upper bicuspids were prepared for the reception of three-quarter crowns as abutments for the fixed bridge that was inserted later. Figures 5 and 6 show the appearance of the patient after insertion of the fixed bridge. Comparison of these illustrations with Figures 1 and 2 shows the fine esthetic results of the operation.

It sometimes happens that both upper and lower jaws are in harmony with each other but, from the esthetic point of view, they are in a pronounced protrusive position in relation to the lips and to the rest of the face. Correction of these conditions can often be accomplished by alveolar resection of both jaws.

Technique

1. Roentgenograms must be taken of the area, and must be studied carefully before any surgery is undertaken. This should be done routinely inasmuch as a roentgenogram will often reveal unsuspected impacted teeth and anatomic anomalies not apparent on clinical examination.

2. Either local or general anesthesia may be employed.

3. After the exposed surfaces are painted with Talbot's iodine, an incision is made in an oblique line from the disto-labio-gingival angle of the extreme tooth to be extracted (in this case, the cuspid), to a point overlying the apex of the adjoining tooth distally (the apex of the bicuspid). A similar incision is made on the opposite side of the jaw. The Bard-Parker blade number 11 is the lancet of choice.

4. After both oblique incisions have been made laterally, the gingival border between them is freed by cutting across the interdental papillae with the same lancet, and by the subgingival application of a periosteal elevator (Molt periosteotome number 2). The same periosteotome may be used to reflect the entire mucoperiosteal flap labially, exposing the labial alveolar process. This alveolar bone is removed with a hand chisel (Woodward number 1) and rongeurs (Cleve-Dent number 5). The removal

Fig. 3—Considerable space between incisal edges of upper and lower anterior teeth when posterior teeth are in occlusion.

Fig. 4—Appearance of mouth after extraction of upper anterior teeth and removal of section of alveolar process that was not in harmony with size and shape of opposing jaw.

Fig. 5—Appearance of patient after insertion of fixed bridge.

Fig. 6—Profile view of Figure 5.

of the overlying alveolar bone exposes the roots of the teeth to be extracted, and they can be removed easily.

5. The flap is kept well retracted, and the interdental septi of bone are sheared off to the desired anteroposterior plane by the vertical application of the shear type rongeurs (Cleve-Dent number 5). The same rongeurs may be used in a horizontal plane if it is necessary to reduce the vertical length of the ridge.

6. When the ridge has been trimmed sufficiently, all sharp points and edges are smoothed with a bone file (Cleve-Dent number 10). All spicules are removed, and the osseous surface is curetted lightly to clear the marrow openings that may have been clogged with bone filings.

7. The mucoperiosteal flap is allowed to come down to its relaxed position, and is studied for a moment to determine how much of its length has been made superfluous by the removal of the underlying bone. The superfluous length is trimmed away with the Bard-Parker shears (edge number 4100S).

8. All that remains to be done to complete the operation is the suturing. Sutures may be continuous or interrupted, as the operator chooses. My preference is the continuous suture, using catgut number 000 and the number 14 half-circle needle.

9. The mucous membranes are again painted with Talbot's iodine, and the patient is dismissed with instructions for postoperative care. He should be advised to place ice packs over the operative area at 10-minute intervals, leaving the packs on for 10 minutes and again off for 10 minutes, thus alternately on and off for four hours. The patient is given three 5-grain capsules of nembutal and aspirin. One capsule is to be taken 4 hours before bedtime, and one at bedtime of the day of operation; the third is to be taken at bedtime the following day.

360 *Main Street.*

Unsolicited Manuscripts Are Welcome

"When you have made an observation of value or reached a conclusion concerning the unusual, publish it. Avoid carrying unpublished knowledge to the grave!"—Sir William Osler.

A Method of Bleaching Mottled Dental Enamel

GEORGE R. WARNER, M.D., D.D.S., Denver

DIGEST

A simple dental bleaching process which does not destroy any portion of the enamel and gives permanent results is reported.

Cause of Mottled Enamel

Mottled enamel, or dental fluorosis, endemic throughout the world, is one of the worst blemishes to which teeth are subject. This condition of the teeth is characterized by flocculent white spots and brown spots of various shades, shapes, and sizes. Dental fluorosis takes place during enamel formation and is caused by fluorine in the drinking water in the amount of 1 part per million or more. The defect is enamel hypoplasia of the systemic type.[1]

Types of Mottled Enamel

Mottling of enamel may be divided into at least three degrees of severity:

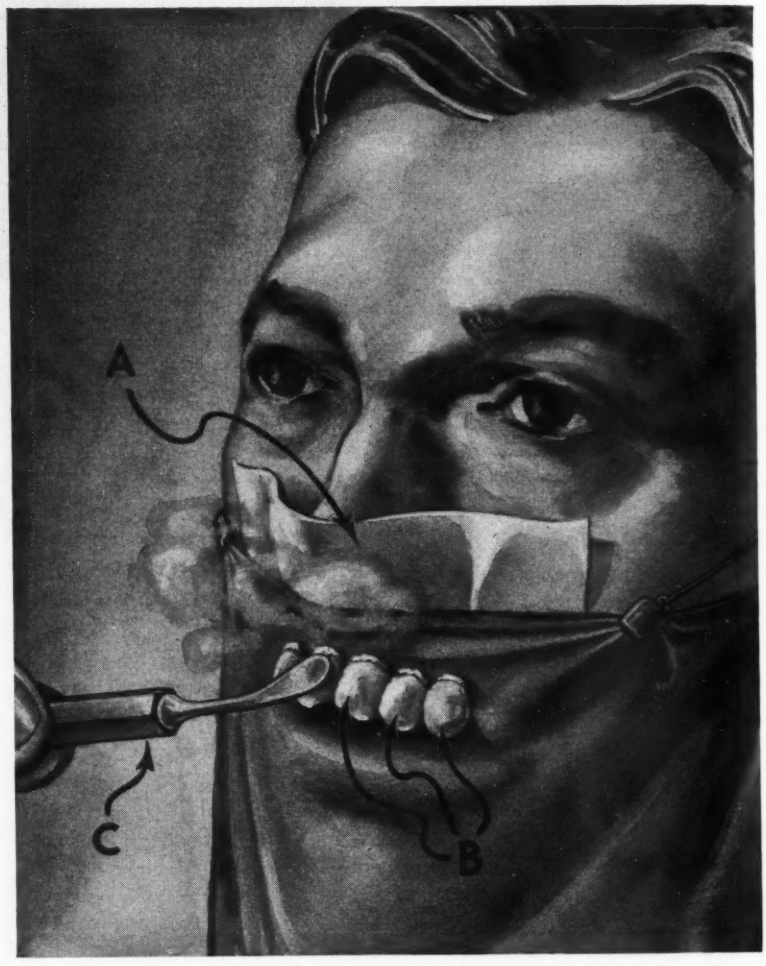
1. The least severe mottling (first degree) is manifested by light spots on the teeth. Inasmuch as it cannot be corrected, it is, fortunately, a condition which is not too objectionable. The light, or white, spots of first degree fluorosis are found also on teeth with second and third degree fluorosis.

2. The light brown spots in second degree fluorosis give, at a short distance, the general effect of tobacco-stained teeth.

3. In the third degree, the most severe fluorosis, the spots are dark brown, and little or no normal enamel is seen in the affected teeth.

Treatment

Various treatments have been advocated for dental fluorosis, but I will describe only the one which I have used successfully for about thirty-five years, in which hydrogen dioxide is used as the bleaching agent. For many years I used pyrozone, a 25 per cent ethereal solution of hydrogen dioxide. A newer preparation of hydrogen dioxide, superoxol, 30 per cent, is stronger. One author[2] advises the addition of ether to superoxol in the bleaching of mottled enamel, but I have not found this necessary.



A, Paper over nose to prevent irritation of skin by steam; B, cotton saturated with superoxol in place on teeth; C, heated spatula (wood handle) applied to saturated cotton, causing steam which penetrates mottled enamel.

Application of Superoxol — Although superoxol is not caustic in the sense that it destroys living tissue, it bleaches and stings both the skin and the mucous membrane. The sting caused by the steam of superoxol is especially severe. It is necessary, therefore, to adjust the protective rubber dam in preparation for bleaching and to slip a piece of paper under the upper edge of the dam to protect the patient's nose (see illustration). After the rubber dam is adjusted, the teeth should be scrubbed with alco-

[1]Orban, Balint: Oral Histology and Embryology, St. Louis, C. V. Mosby Company, 1944, page 98.

[2]Smith, H. V., and McInnes, J. W.: Further Studies on Methods of Removing Brown Stain from Mottled Teeth. J.A.D.A., 29:571 (April) 1942.

hol. Chloroform should not be used for this purpose because of its destructive action on the type of rubber dam now available. Dry cotton may be ligated to place on the tooth and then saturated with the superoxol, or pledgets of cotton saturated with superoxol may be placed on the teeth to be treated.

Steaming — How effective the bleaching action of hydrogen dioxide would be if applied to the enamel surface without heat, I do not know. I believe that heating the superoxol to the point of producing steam gives greater penetration and increases its bleaching effectiveness. Cold superoxol will bleach the skin on the operator's hands, but the effect disappears within an hour. Cotton that has been saturated with superoxol and then steamed will bleach the operator's hands for twelve hours or more.

The heat to produce steam may be applied with an ordinary laboratory wax spatula (see illustration). The degree to which the spatula should be heated is determined by the trial and error method. At the effective temperature a blast of steam will be apparent the instant the spatula is placed on the cotton. The spatula is removed immediately so that the heat does not penetrate deep enough to cause discomfort.

Length and Number of Treatments —I have found that a man of about forty years of age usually feels no discomfort, but that a teen-age patient usually feels slight discomfort at the time of treatment and sometimes has slight hyperemia for several days thereafter. It seems wise, therefore, in treating young people, to apply the heat no more than ten times during a treatment, and not to give another treatment until the sensitiveness of the teeth has subsided. This period varies from less than a week to three weeks or more.

An hour appointment is long enough for a treatment, and most patients require five to ten treatments. A patient with second degree mottling may be well satisfied after three treatments although then there is usually still slight discoloration present.

Effectiveness of Treatment—The effect of the bleaching process is not discernible immediately after treatment but will be noticeable in a few days. The first patient I treated in this way had third degree mottling of the dental enamel. After thirty-five years all that can be seen of the original condition are the flocculent white spots which are not noticeable except on close inspection by trained eyes.

1206 *Republic Building.*

Stomatitis Due to Riboflavin Deficiency

H. E. JONES, T. G. ARMSTRONG, H. F. GREEN, and V. CHADWICK

Manifestations

Of 10,313 men in a camp in North Africa, 1,746 had stomatitis. The symptoms comprised sore tongue, sore lips, some degree of trismus from the cheilosis, and excessive salivation. The pain was variable. An early sign was the avoidance of pepper, of which these men ordinarily ate a considerable quantity.

The men with the mildest manifestations complained of soreness of the tip and edges of the tongue. These areas were reddened, and the papillae were less conspicuous than usual. As atrophy advanced, the redness usually diminished. During this intermediate stage the papillae became enlarged and flat topped. In more advanced stages the tongue became increasingly smooth and shiny, and fissures started to develop. In the final stage the anterior part of the tongue was completely smooth and atrophic. The papillae had disappeared, and the superior surface was glazed, often showing a white atrophic patch in the midline. Occasionally a few petechial hemorrhages were observed on the under surface.

An angular stomatitis was another important change. This started as a tiny, painful, raw, red area at the commissure of the lips where the mucous membrane joins the skin. The changes tended to spread to the mucous membrane of the lower lip.

Less commonly observed on the mucosa of the lower lip was a group of small papular swellings, each about the size of a pinhead and usually slightly paler than the surrounding reddened mucosa. In only twenty of the 1,746 affected men were lesions seen on the mucous membrane of the upper lip. The incidence of changes on the palate was about 5 per cent.

Diet Analysis

On a diet containing an average of 1.61 milligrams of riboflavin per day, the camp population had been free from stomatitis. It developed about two months after the daily riboflavin intake was reduced to about 1 milligram per person, and was not abolished by an intake of 1.28 milligrams in the following month. It was noted that none of the thirty-six men employed in the bakery had stomatitis. Their diets and habits were the same as those of the other men, but they were accustomed to test the saltiness of the dough by tasting it, and by this means they may have obtained enough yeast to keep healthy.

The stomatitis cleared rapidly on addition of milk, meat, or eggs to the diet. Fresh or dried yeast in ½ ounce (14 gram) doses effected rapid cure. Other remedies tried were calcium lactate, red palm oil which contained large amounts of vitamin A, and vitamin oil containing vitamins A and D. None of these remedies effected improvement.

The cause of the stomatitis was evidently deficiency of a factor present in milk, meat, eggs, and yeast, and further attention was directed to two vitamins present in yeast—nicotinic acid and riboflavin. The stomatitis yielded rapidly to treatment with riboflavin.

—From Abstracts from Current Literature, *War Medicine*, 6:125 (August) 1944.

Ionization in Root Canal Therapy

ROSALIE CARTER, D.D.S., Franklin, Tennessee

DIGEST

The modern views on root canal therapy are discussed, and the principles and technique of the ionization method are presented.

TREATMENT OF the pulpless tooth has been one of the most controversial subjects in the history of dentistry. Although no unanimity of agreement exists today, extreme views are much less evident than formerly. Extraction is not the solution to the root canal problem. Pulpless teeth still occur despite our efforts in preventive dental education. The need for intelligent practice of root canal therapy is, therefore, still existent. Electrosterilization (ionization) is a method that should receive more consideration because of the excellent results which have been obtained in many badly diseased teeth and because the technique, although tedious, is not difficult.

Misconceptions About Pulpless Teeth

Four misconceptions concerning the pulpless tooth should be considered by those who believe that all pulpless teeth should be removed:

A pulpless tooth is a dead tooth—A pulpless tooth is *not* a "dead" tooth. According to Marshall,[1] "The life of a tooth is dependent upon the integrity of the periodontal membrane and not upon the integrity of the pulp."

A pulpless tooth is an infected tooth—"Another misconception that gained credence," writes Grossman,[2] "is that a pulpless tooth is an infected tooth." Although some pulpless teeth are infected, this does not mean that *all* pulpless teeth are infected. The recovery of bacteria from pulpless teeth does not necessarily indicate that infection is present. Only when the presence of microorganisms produces a reaction such as an inflammation, can infection be said to exist. The mouth at all times contains bacteria; nevertheless, infection is absent under ordinary circumstances. Infection depends not only on the presence of organisms but on the ability of such organisms to produce a local or systemic reaction.

All rarefied areas viewed in roentgenograms are infected—One should bear in mind that not all rarefied areas viewed in roentgenograms are necessarily infected. "The roentgenogram does not," write Lundquist and Kellogg,[3] "accurately define what the radiolucent zone consists of; and because it merely reveals defects of contour of hard substance, tooth, and bone, and not of the soft connective tissues or epithelium, no absolute diagnosis should be based on it."

Vitality of a tooth is an indication of the health of the pulp—Sommer and Crowley,[4] following an exhaustive and scientifically sound study of the pulpless tooth, reported many positive cultures obtained from vital pulps. They point out that electric vitality tests merely record nerve irritability of the fibers within the pulp tissue, giving no accurate information as to the status of the circulatory elements. The first change to occur is a disturbance in the delicate capillaries. Thoma[5] describes a vital pulp as follows: "As long as metabolism takes place, we may speak of a pulp as vital, but at the same time it may be diseased, just as a person may be alive and at the same time sick."

Modern Root Canal Therapy

Root canal therapy, intelligently and carefully done, can be a safe operation. Today we have a better understanding of histopathology, and improvements have been developed in the technique of treatment of pulpless teeth. Asepsis, rather than antisepsis, is emphasized, and more extensive use of roentgenograms is made during treatment. Cases are selected carefully, and not all pulpless teeth are saved.

Coolidge[6] mentions three factors that should be considered before deciding on pulp treatment. They are: (1) the general health and susceptibility of the patient to infection; (2) the value of the tooth to the patient as a factor in the mechanical reconstruction of the natural or artificial denture; and (3) the ability of the operator to carry out the treatment of the tooth to a successful completion.

To obtain a disinfected canal and periapical area is probably our greatest problem. Many means to this end have been suggested, including: (1) topical medication, the simple introduction of a medicament into a root canal; and (2) electrolytic medication, in which an electric current is employed to carry the electrolyte into the infected area surrounding the apex. The electrolytic method was first used for the sterilization of infected root canals by Brewer in about 1893. Topical medication is generally recommended for the treatment of mildly infected pulpless teeth, those without areas of rarefaction. Electrosterilization (ionization) is reserved for more severely involved pulpless teeth with definite areas of rarefaction, or those which have not responded to topical medication. When disinfection has been effected, the formation of bone within the area formerly rarefied will be seen in roentgenograms within six months to nine months.

[1]Marshall, J. A.: The Relation to Pulp Canal Therapy of Certain Anatomical Characteristics of Dentine and Cementum, D. Cosmos, **70**:253, 1928.
[2]Grossman, L. L.: Root Canal Therapy, First edition, Philadelphia, Lea & Febiger, 1940.
[3]Lundquist, G. R., and Kellogg, D. E.: Roentgenographic and Microscopic Evidence and the Pulpless Tooth, J.A.D.A., **28**:580 (April) 1941.
[4]Sommer, R. F., and Crowley, Mary: Bacteriologic Verification of Roentgenographic Findings in Pulp-Involved Teeth, J.A.D.A., **27**:723 (May) 1940.
[5]Thoma, K. H.: Infected Dental Pulp, J. D. Res., **8**:529 (August) 1938.
[6]Coolidge, E. D.: Clinical Pathology and Treatment of the Dental Pulp and Periodontal Tissue, Philadelphia, Lea and Febiger, 1939.

Principles of Root Canal Technique

The following rules by Grossman[2] will serve as a guide in preparing an "empty" canal:

1. Direct access should be obtained along straight lines.
2. Smooth instruments should be used before barbed or rough instruments.
3. Narrow instruments should be used first.
4. Reamers, if used, should be used before files.
5. Files should be used with a pull stroke.
6. No root canal instruments which bind should be used.
7. Apical tissues should not be traumatized.
8. Debris should not be forced through the apex.
9. Motor-driven instruments should be used only as a last resort.

Sterilization of Canal

After the contents of the canal are removed, the next procedure is to obtain a sterile root canal and periapical area, for which an ionization machine is used.

1. Measure the iridioplatinum electrode so that it extends to a point a little short of the apex; it should fit the canal loosely.
2. Flame the electrode, and allow it to cool.
3. Flood the root canal with Churchill's or Lugol's iodine solution (I use Churchill's solution). If a more stable solution is desired, the one recommended by Grossman and Appleton[2] may be used. A pipette made by fusing an iridioplatinum needle into a small glass dropper may be used to carry the iodine.
4. Plug the iridioplatinum tooth electrode into the negative jack of the set, and insert the other end of the electrode into the canal with the potentiometer dial turned back to zero.
5. Give the patient the metallic tube hand electrode to hold in the palm of the hand. (Rings should be removed from the fingers.) Plug the electrode into the positive jack.
6. Increase the current slowly until the patient feels a tingling sensation in the tooth; then decrease the current slightly so that no uncomfortable sensation is felt. The length of the treatment (in minutes) is proportional to the number of milliamperes tolerated by the patient. Thus, if the patient tolerates 2 milliamperes, the treatment time is 30 minutes divided by 2, or 15 minutes.

Additional iodine solution may be needed as the ionization proceeds. Never remove the electrode without first turning off the current. Keep an accurate record of the time for treatment. Sometimes the patient can tolerate a higher milliamperage as the treatment progresses, thus shortening the treatment time.

7. After treatment, the current is turned off slowly, and the tooth electrode is removed. The canal is washed with grain alcohol for about ten minutes to remove the iodine. The canal is now sterile and all contamination must be prevented.

Filling of Root Canal

Adams[7] believes that no matter what method of treatment is followed the canal should never be filled until at least two negative cultures have been obtained. To make a culture requires at least forty-eight hours. During this time a sterile paper point moistened with a 50 per cent solution of thymol in alcohol is doubly sealed in the canal with gutta percha dipped in a solution of resin in chloroform and covered with oxyphosphate cement.

Johnston[2] fills the canal immediately after ionization, before seepage or contamination can take place. He believes ionization to be an effective means of disinfecting the canal and the apical area beyond. This method of filling the root canal is unusual in that lateral channels are likewise filled. It consists of flooding the canal with 95 per cent alcohol, absorbing the excess alcohol with paper points, and flooding the canal with Callahan's resin-chloroform solution. A suitable gutta percha cone is then inserted and is compressed laterally against the wall of the canal with a churning or stirring motion. A roentgenogram should be taken after the first cone is compressed to see that the apical end has been reached. This is done with the rubber dam in place. Other cones are placed in the canal until it is completely filled. Condensation is completed, a final roentgenogram taken, and the rubber dam removed. The crown portion is left open for a few days so that the saliva may have access to any iodine remaining in that portion of the tooth. The tooth restoration is inserted later.

Carter Building.

[7] Adams, F. R.: D. Items Interest, **61**:652 (July) 1939; **62**:315 (April) 1940; **63**:328 (April) 1941; and **63**:639 (July) 1941.

We Can't Pay You, But—

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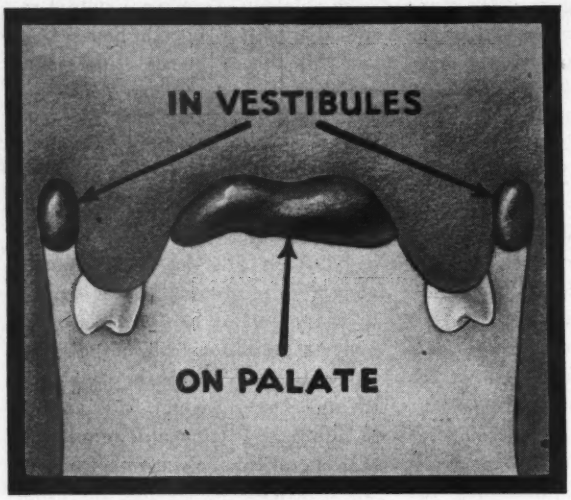
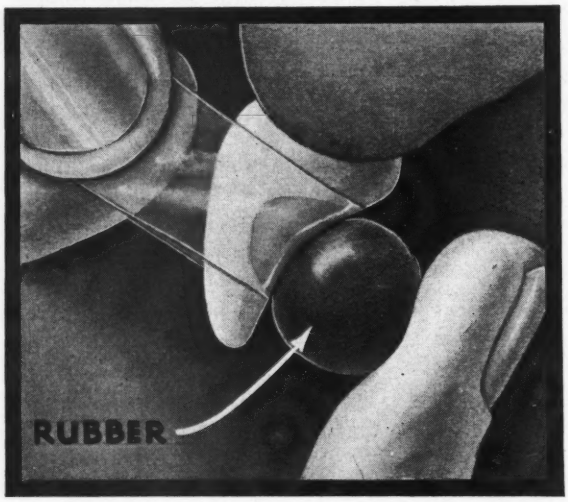
Clinical and Laboratory Suggestions



A Method of Preventing Air Traps in Taking Colloid Impressions

Submitted by Leslie L. Hoke, D.D.S., Fulton, New York

Fig. 1—Cover the palate and fill the vestibules with colloid impression material before inserting the filled impression tray into the mouth.



A Method of Contouring the Lingual Surface of Class III Silicate Restorations

Submitted by A. Benjamin, D.D.S., U.S.P.H.S., Brighton, Massachusetts.

Fig. 2—Place a small ball of unvulcanized rubber against a celluloid strip on the lingual surface of the tooth, insert the restoration as usual, and bring the strip of celluloid around the tooth anteriorly. This will eliminate any excess silicate and will give the tooth normal contour.

A Container for Zinc Oxide-Eugenol Paste

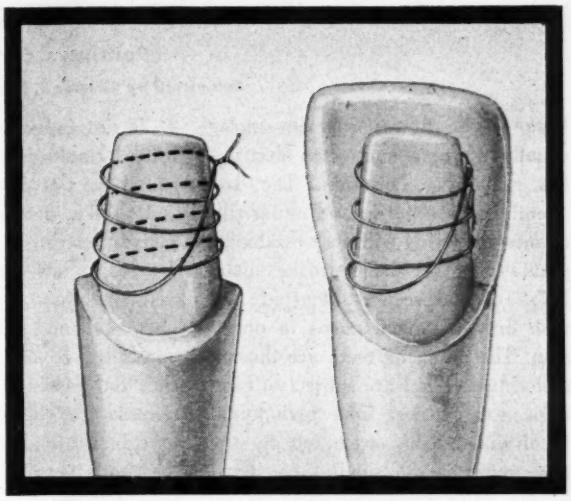
Submitted by Lieutenant (jg) Roland B. Herman (DC) USNR, Sampson, New York

Fig. 3—Replace the cap washer of a discarded Skrip ink bottle with blotting paper, fill the large portion of the bottle with anhydrous calcium chloride, and place the zinc oxide-eugenol paste in the side well. The paste kept tightly sealed in this container can be used over a period of several weeks.

A Simple Reinforcement for Acrylic Jacket Crowns

Submitted by Chester J. Henschel, D.D.S., New York City

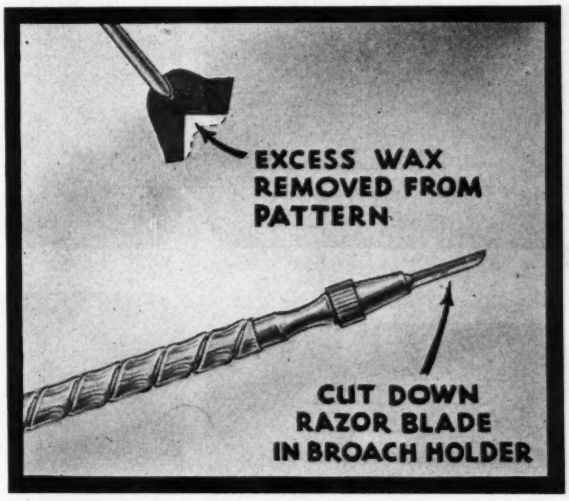
Fig. 4—Make the preparation, impressions, dies, and models in the usual manner. Before waxing the die, however, loop .008-inch or .010-inch soft stainless orthodontic ligature wire (depending on size of preparation and available space) *loosely* three or four times in a coil formation around the tooth preparation, and twist the two ends of the wire together. Clip the twisted ends short and tuck them in at a site offering sufficient potential bulk. Include the wire coil in the waxed jacket crown, and invest as usual. Care must be taken not to lose the coil in the boiling-out process; the coil is loose and may fall over the top of the preparation. Pack and process the acrylic, and the wire reinforcement will be unobtrusively buried within the acrylic jacket crown.



A Razor-Sharp Blade for Removing Excess Wax from Pattern

Submitted by Lieutenant Robert Vane (DC) USNR, Iowa City

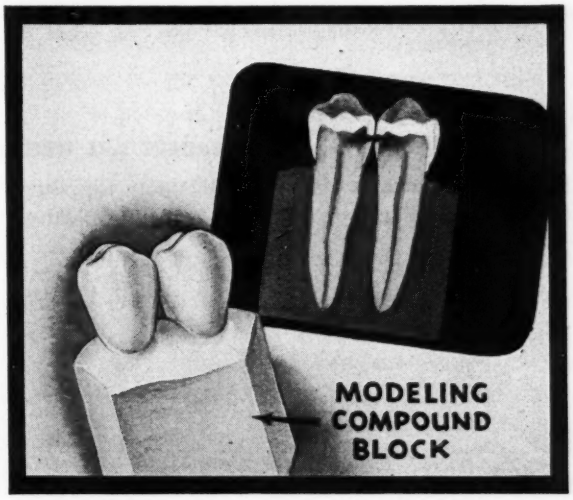
Fig. 5—Cut down the broken-off edge of a discarded razor blade by means of a wheel stone to a narrow ½-inch blade which can be secured in an ordinary broach holder. This sharp blade can be used effectively in squaring up pulpal and axial walls of uneven wax inlay patterns, thus preventing discomfort due to thermal changes (cement base created when inlay is set) and waste of time and gold in grinding the cast inlay on these surfaces.



A Model Used for Patient Education

Submitted by S. L. Elliott, D.D.S., Osakis, Minnesota

Fig. 6—Place two teeth with hidden interproximal cavities into a block of modeling compound so that the teeth are removable. Take a roentgenogram of the teeth in place in the block to show the presence of the cavities. Both the model and the roentgenogram can be used to justify to the patient the taking of roentgenograms.



(*Continued on following page*)

CLINICAL AND LABORATORY SUGGESTIONS (CONTINUED)

Pontilays for Saving Teeth

Submitted by Chester J. Henschel, D.D.S., New York City

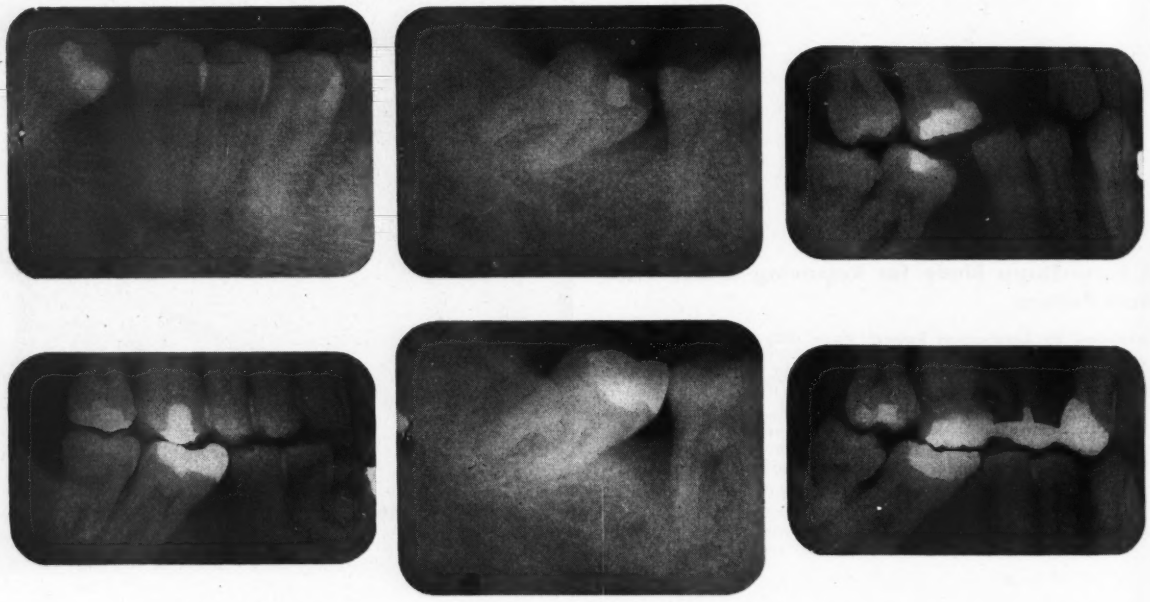
Loss of the first permanent molar usually disrupts and often destroys the remaining dentition. Too frequently we see the second molar tilted mesially, lying with its mesial marginal ridge far beneath the distal bulge of the second bicuspid and with only its distal cusps in occlusion. The opposing teeth are thus in malocclusion and are subject to food impaction, caries, and periodontal involvement. The space left by the first molar is too small for a fixed bridge, and a removable space retainer is not indicated. I have had excellent results by using what I have called the *pontilay*:

1. Make a simple but retentive inlay preparation on the second molar, using all the occlusal grooves of the tooth.

2. Scale and polish the entire tooth carefully. It may be necessary to slice the mesial slightly. It is rarely necessary to cut or remove the mesial marginal ridge inasmuch as the tilt of the tooth permits enough room for gold between it and opposing teeth.

3. The pattern may be carved directly, or indirect impressions may be taken. I prefer to take a hydrocolloid impression in a copper band, with subsequent use of a stone die upon which a direct wax index is placed and carved.

The inlay should create a false high mesial marginal ridge, a new contact point, normal occlusion, and a smooth harmony with tooth structure on the mesial, buccal, and lingual.



Roentgenograms showing teeth before (above) and after (below) pontilay treatment.

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The Editor's Page

MOTTLED ENAMEL, a serious disfigurement, is produced by fluorine in drinking water. Molds growing in bacteriologic media represent contamination. These are two scientifically verifiable observations. Both phenomena, however, have beneficial values. If fluorine is present in drinking water in small amounts, it confers a partial immunity to dental caries. One of the contamination mold growths is the origin of the valuable penicillin. So it is in all Nature: Minerals, gases, and bacteria in favorable amount and in balance are life-sustaining; in disequilibrium, they may be toxic and life-destroying.

Fluorine therapy is of two kinds: (1) the addition of 1 part per million of fluorine to the communal water supply; and (2) the direct application of fluoride in solution to the teeth. If adding fluorine to the communal water supply is to be effective, the child must consume the water without long interruptions during the entire calcification period of the permanent dentition, or, roughly, during the first eight years of life. The cost of adding fluorine to the water supply is extremely low—7½ cents per capita per year according to Faust. In the amount of 1 part per million, fluorine is not considered to be toxic.

If all children in the population could be reached, the addition of the chemical to the communal water supply would be the simplest and the cheapest method. At present, however, one third of the population of the United States depends on noncommunal water supplies. This is virtually the same rural group that finds individual dental treatment both unavailable and too costly. The topical application of fluoride can be used immediately with all children and adults, whereas the addition of the chemical to the water supply is helpful only to children in the calcification period. The cost factor, however, is considerably higher when individual topical treatment is used. At present only licensed dentists have given the treatments although there is no practical reason why this simple procedure could not be carried out by dental hygienists.

The pioneer investigators in this field—Bibby, Cheyne, Knutson, and Armstrong—are generally agreed that the incidence of dental caries can be reduced approximately 40 per cent by the periodic topical application of sodium fluoride. Bibby uses a 0.1 per cent solution; Knutson uses a 2 per cent solution. Knutson has observed that although the chemical is effective in a favorable percentage of cases it is more effective in the upper teeth than in the lower teeth and is quite ineffective in the areas of active caries.

The technique of application as described by Bibby is as follows:[1] "Two to twenty-four hours prior to each fluoride treatment, all teeth were given routine prophylaxis by a dental hygienist. Fluoride treatment consisted of cleaning the teeth with hydrogen peroxide, isolating the test side with cotton rolls, dehydrating with alcohol, and keeping all surfaces of the teeth wet with sodium fluoride for seven or eight minutes by means of repeated applications with cotton swabs."

The public health implications of fluorine are overwhelming. If by the simple and inexpensive method of adding fluorine to the community water supply a 50 per cent to 65 per cent reduction in caries is possible (as is demonstrated by Dean), it means that a preventive procedure for two thirds of future American children is within our grasp. Inasmuch as the use of topical fluoride for children and adults shows a reduction of 40 per cent of caries incidence, it appears that the preventive millennium is near. But throughout our years and the years of our children's children the technical skills of dentists will be in urgent demand.

[1]Bibby, B. G.: Preliminary Report on the Use of Sodium Fluoride Applications in Caries Prophylaxis, J. D. Res., 21:314 (June) 1942.

Dietary Treatment for Dental Caries: Low Carbohydrate Diets*

IT HAS BEEN demonstrated that a close correlation exists between the number of lactobacilli in the saliva and the degree of dental caries activity. It has also been found that the number of these oral organisms can be reduced and dental caries arrested by restriction of carbohydrate in the diet.

In the dietary treatment of caries, it is first necessary to determine the patient's lactobacillus count by culturing a specimen of saliva.[1] If the count is 10,000 or higher, Diet I is prescribed for a two-week period. At the end of that time another saliva specimen is sent to the laboratory, and the patient immediately changes to Diet II. After two weeks, another saliva specimen is sent to the laboratory. Ordinarily the count taken after the first dietary period is low. If the count taken after the second dietary period has not increased over the previous test, the patient may proceed with Diet III. If the count has gone up following Diet II, the patient remains on this diet for a longer period and does not change to Diet III.

After two weeks on Diet III another culture is taken, and if the count is still low the restriction of sugar is no longer necessary. Periodic checks may be made thereafter in order to determine the need for future dietary direction.

*Suggested by the Michigan Department of Health.

[1]A free diagnostic laboratory service is offered to the dentists in the state by the Michigan Department of Health.

General Dietary Suggestions

1. Plain unflavored gelatin (not jello), salt, flavoring extracts, and vegetable colorings, may be used as desired.

2. Saccharin may be used as a substitute for sugar. One-fourth grain of saccharin has the sweetening value of 1 teaspoonful of sugar.

3. Clear broth or bullion may be used as desired. Soup may be made with cream, milk, and vegetables as the dietary plan allows.

4. No foods prepared with sugar are allowed. Canned or frozen fruits must be prepared without sugar.

5. Salad dressings should be home prepared. Commercial preparations usually contain some carbohydrate.

6. Do not eat confections of any kind (chewing gum, soft drinks, sugar-coated pills, and cough mixtures), or catsup and chili sauce.

Plan I

The preliminary dietary period is two weeks. This diet contains approximately 100 grams of carbohydrate with protein and calories adequate for the age and activity of the patient.

[2]The choice of fruits and vegetables should not include more than one serving of 12% carbohydrates and one serving of 15% carbohydrates in one day. During the first two-week period none of the foods classified in the 18% and 21% carbohydrate group should be included in the diet. (See list of fruits and vegetables classified according to their carbohydrate content.) A serving consists of ½ cup of cooked or ¾ cup of raw fruits and vegetables.

Fruits and Vegetables Classified as to Their Carbohydrate Content

3 Per cent	6 Per cent	9 Per cent	12 Per cent	15 Per cent	18 Per cent	21 Per cent
Vegetables: Asparagus Bean sprouts Beet greens Broccoli Cabbage Cabbage, Chinese Cauliflower Celery Chard Chicory Cucumber Endive Escarole Lettuce Mustard greens Radishes Sauerkraut Sorrel Spinach Squash, summer Tomatoes Tomato juice Turnip tops Watercress Fruits: Rhubarb	Vegetables: Beans, green Beans, wax Chives Collards Dandelion greens Eggplant Kale Kohlrabi Lambsquarters Leeks Okra Parsley Pepper, green Pepper, red Pumpkin Soybeans, shelled green Squash, winter Turnips Fruits: Melons— Cantaloupe Casaba Honeydew Spanish Watermelon Strawberries	Vegetables: Artichokes Beets Brussels sprouts Carrots Onions Rutabagas Fruits: Blackberries Cranberries Currants Gooseberries Grapefruit Grapefruit juice Lemons Limes Tangerines	Vegetables: Soybeans, dry Fruits: Apricots Cherries, sour Kumquats Loganberries Oranges Orange juice Peaches Pineapple Pineapple juice Plums Quince Raspberries	Vegetables: Beans, canned red kidney Parsnips Peas Salsify Fruits: Apples Blueberries Grapes Huckleberries Mangos Nectarines Pears	Vegetables: Horseradish Potato Fruits: Cherries, sweet Crabapples Figs, fresh Grape juice Pomegranates Prune juice	Vegetables: Beans, fresh Lima Corn, fresh Fruits: Bananas Prunes, fresh

Plan II

Select any of the foods from diet Plan I and include whole wheat bread not to exceed six slices. Increase fruits and vegetables (including potato) to desirable amounts, being certain that *none* has been prepared with sugar. All fruits and vegetables must be fresh or canned without sugar. Commercially canned vegetables (except peas and corn) may be used.

Plan III

Continue diet Plan II, adding as much sugar as is desirable at *one* meal during the day. This sugar is to be taken *with* the meal, not between meals. If the lactobacillus count has not increased during a two-week period on Plan III, an unrestricted diet can be used.

—From the *Journal of the Michigan State Dental Society*, **26**:198 (September) 1944.

Daily Food Intake for Age Groups

Age	Milk	Eggs	Meat	Cereal	Fruits & Vegetables[2]	Butter
1-3	1½ pt.	2	1¾ oz.	¼ cup	6 servings	2 tbsp.
4-6	1 qt.	2	3½ oz.	½ cup	7 servings	2 tbsp.
7-9	1 qt.	2	4 oz.	½ cup	7 servings	4 tbsp.
10-12	1 qt.	2	5 oz.	½ cup	7 servings	4 tbsp.
13-15	1 qt.	2	9-12 oz.	½-1 cup	7 servings	5 tbsp.
Adult	1 qt.	2	14 oz.	1 cup	9 servings	6 tbsp.

Contra-Angles

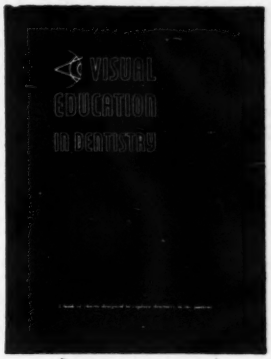
In Convention Assembled . . .

ALL DENTAL SOCIETIES are organized on a democratic basis. Most of them function that way. Once in a while control falls into the hands of a political group that has aspirations to operate like a political machine. There are several local dental societies and a few state societies manipulated by a "boss" or two who, in their conniving, differ not a particle from some of the notorious political machines of the country. These local "bosses," like the ward heeler that they aspire to imitate, are not satisfied to operate in their own component and constituent societies, but have the political ambition to reach out to the larger and greener pastures of the American Dental Association. They have ambitions to be king-makers and dictators. You see them holding court at every American Dental Association convention, whispering in the lobbies, conspiring in the smoke-filled rooms, and talking behind their hands at every occasion. A few of these boys have built up smoothly functioning machines that operate to elect American Dental Association officers from among their friends and stooges and to clip the wings of their enemies. Mediocre men have been elected to office in the American Dental Association by this method and distinguished men have been defeated.

Once in a while a Board of Trustees of the American Dental Association takes an action that is unpopular with the House of Delegates, and finds that the action is reversed by the most democratic of all processes: the popular vote. A recent incident is an example: The present secretary of the American Dental Association was recommended for re-

(*Continued on page* 522)

A dentist has written to us: *"Enclosed is check for $2.00 for two copies of Visual Education in Dentistry. The third copy I have is worn out from handling so much. Its worth to me can hardly be computed."*



Do you need a replacement copy? . . . Price is still $1.00 to subscribers . . . .

It is our firm belief that the statement this dentist made (see above) is characteristic of what thousands of practitioners think about the booklet VISUAL EDUCATION IN DENTISTRY. Recently we have been receiving more and more orders from users who have had at least one copy at some time in the past. Approximately 70,000 copies have been sold since the first edition became available several years ago.

If you find that your own copy is badly worn, the coupon order form below is for your convenience in reordering. The price is still $1.00 to those who receive The Dental Digest regularly.

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OUR BEST HABIT

. . . *says the Axis*

It's American sociability! We love to get together and . . . *talk*. We talk about our work . . . about what we see, or hear from others . . . about latest letters from our boys.

Then others repeat our words to others . . . and others . . . and others . . .

From 10 . . . 50 . . . 200 random phrases about our war production or our boys in uniform, expert Axis agents piece together *one* important military secret which *you* may help betray . . . just by being sociable!

Don't repeat even *little* things about our war program unless they've been published or broadcast. Think *before* you talk!

tirement by a vote of 9 to 4 by the Board of Trustees. When this recommendation was brought before the House of Delegates at the October Meeting in Chicago, the action of the Board was disapproved, and the House voted to continue the secretary in office. The preliminary skirmishes, the whisperings, the schemings, and the tradings before the vote were at the same level that they are in State Houses and in the cloakrooms of Congress. But this is the democratic process.

The power that elects to office is also the power that recalls from office. This is the spirit that we have to keep as the soul and the heart of the democratic process. We elect by popular choice and recall from office by the same method. On occasions officers function in a dental society in the same way that people have crept into other organizations of society. After they are safely elected, they take it upon themselves to assume the airs of the Divine Right and to act as if they were chosen by the Forces on High. In the interval between elections they ride with indifference over the interests of the people who elected them. At election time they become goody-goody boys again. Their smiles are brighter and their handclasps more frequent. Then one day an election comes up, and they suddenly find themselves in the ash can of the defeated candidate. They were too arrogant to be continued in office.

The over-all job done by the American Dental Association is superb. For an organization of 55,000 people, staffed only by a small number of paid employees, to operate with such efficiency is a high tribute to cooperativeness among men. Men serve in the elected offices and on committees at great sacrifice of time and money. They build lasting and worthwhile things. Why do they do this? Occasionally, to be sure, it is the urge for power and ego-expression, but in most cases, it represents a sincere desire to make some contribution to their own profession. A few get into the squabbles and bickering because they love the excitement and the contest. Most of the convention

goers are wholesome, gregarious fellows who love the company and the friendships. Occasionally somebody with a little psychotic quirk has delusions of grandeur and thinks he is playing to the world as an audience. Whoever takes himself too seriously is soon laughed out of office.

One of the sessions of the House of Delegates in October, when the elections were held, presented parliamentary confusion. It would be well if the American Dental Association had a permanent speaker of the House of Delegates, or at least a parliamentarian. Dentists, regardless of how smart they are in their own field, cannot be expected to be parliamentary hot-shots as well. The suggestion has been made that all nominations should be made in advance of the meeting, and that the balloting for offices should be done calmly and with deliberation by the delegates at their convenience at any time during the meeting. It is not well to vote too promptly when an issue is being emotionalized.

So let us give a tribute to the overall splendid activities of the American Dental Association, and not be too rough on the politicians who have so much fun at the meetings. They are expressing in action our reason for fighting the War: The freedom to meet with anybody you choose, at any time you wish, to talk about anything you prefer—all this freedom of movement, assembly, and expression without restraint.

Talks To Dental Writers . . .

One of the most lucid writers of English prose was a chap by the name of Lafcadio Hearn. His book, TALKS TO WRITERS, is one of the best. He warns all of us who put words together to speak specifically, simply, and to the point.

A dentist, writing in the *Journal of the Dental Society of the State of New York*, recently gave a warning to dental writers of the danger of redundancy.[1] His advice is worth passing along:

"After many years of experience

(*Continued on page* 524)

[1]Sweet, A. P. S.: Redundancy in Professional Writing, J. D. Soc. New York 10:30 (September-October) 1944.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS, OF AUGUST 24, 1912.

Of The Dental Digest, published monthly at Pittsburgh, Pa., for October 1, 1944.

State of Pennsylvania,
County of Allegheny,
ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared M. B. Massol, who, having been duly sworn according to law, deposes and says that he is the Publisher of The Dental Digest, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 411, Postal Laws and Regulations, printed on the reverse side of this form, to wit:

1. That the names and addresses of the publisher and editor, are: Editor, E. J. Ryan, B.S., D.D.S., 708 Church Street, Evanston, Ill.; Publisher, M. B. Massol, 1005 Liberty Ave., Pittsburgh, Pa.

2. That the owners are: Dental Digest, Inc., 1005 Liberty Ave., Pittsburgh, Pa.: Oral Hygiene, Inc., 1005 Liberty Ave., Pittsburgh, Pa.; M. B. Massol, 1005 Liberty Ave., Pittsburgh, Pa.; Louise A. Smith, Hotel Schenley, Pittsburgh, Pa.; Lynn A. Smith, 10 Robin Road, Pittsburgh, Pa.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company is trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stocks, bonds, or other securities than as so stated by him.

(Signed) M. B. MASSOL,
Publisher.

Sworn to and subscribed before me this 19th day of September, 1944.

(Seal) Ruth B. Kost, Notary Public.
(My commission expires May 1, 1948.)

in reading of and the examination of dental articles for possible publication, it almost seems to us that many of our dental authors are deliberately trying to make effective use of those seven 'aids to poor writing' that are found listed in Webster's Dictionary as synonymous with redundancy. We dentists are not, of course, the only ones who employ these 'aids.' The same tendency toward redundancy in its various forms is noteworthy among all professional and scientific writers.

"Let us examine those seven 'aids,' define them, and present samples of the type of writing they produce.

"*Redundancy* is the generic term for the use of more words than are needed to express one's meaning. For example:

One or more radiographs *taken, if possible, from several different vertical and horizontal angles* should always be made before *making an attempt at* the extraction of a mandibular third molar for they will provide, *if of good quality and properly mounted and viewed by light of correct intensity, important* information that will be of considerable assistance *to the dentist and his assistant* during the operation.

"Here sixty-five words have been used to express an idea that can be expressed as follows in thirty words:

One or more radiographs should always be made before the extraction of a mandibular third molar, for they will provide information that will be of considerable assistance during the operation.

"*Tautology* is needless or useless repetition of the same idea in different words. For example:

Oral focuses of infection can be responsible for various systemic conditions, in fact, infection anywhere in the mouth may produce an illness affecting the body as a whole.

"In this case, everything after the first comma can be left unwritten, for it merely repeats the same idea in different words and adds nothing to the statement itself.

"*Pleonasm* denotes the use of words whose omission would leave one's meaning intact. Our first example illustrates this, for the improved version was produced by merely leaving out the thirty-five words that are italicized.

"*Verbosity* is excessive wordiness. It differs from pleonasm in that it permeates the writing to such an extent that it cannot be corrected by ex-

(*Continued on page* 526)

cision. The following is an example:

The oral cavity, in its broad range of function, exceeds in importance any other organ of the human body. These include articulation, vocalization, prehension, mastication, insalivation, deglutition, etc. Its employment is constant from the induction of life to the last breath of old age. Its functions are so important that any interfering pathological condition would have manifest effect upon the other organs. This is shown plainly in the disorders accompanying first dentition. When the development of the tooth proceeds more rapidly than the overlying tissues are absorbed, we have local inflammation, the secretions become much increased, pressure on the nervous and vascular supply involves the whole system. The child becomes wakeful, restless, and fretful; refuses nourishment; the alimentary canal becomes more active; diarrhea follows; and we have nausea, vomiting, convulsions, paralysis, and, not infrequently, death. Statistics show that more deaths occur during the period of first dentition than during any other like period during life. When we consider the anatomy of the trigeminus nerve, which supplies the teeth, we recognize the possible reflex effects upon remote organs. This is a compound nerve, varied in its functions—a nerve of special sense, common sensation, and motion; the great sensitive nerve of the head and the face; the motor nerve of mastication, its lingual branch being the nerve of the special sense of taste. It sends important branches to the ear and eye, anastomosing with many other nerves. It is not strange, then, that we have remote lesions originating from disorders affecting this nerve. Neuralgia and earache are among the most common.

"The paragraph above contains 272 words. Its wordiness is so excessive that it must be entirely rewritten. The following revision contains 155 words:

The oral cavity, because of its many functions essential to life, exceeds in importance almost any other organ of the body. Thus any pathological interference of these functions quickly disturbs the other organs, as evidenced by those disorders which accompany first dentition. If, for instance, a tooth develops more rapidly than its overlying tissues are absorbed, inflammation results which, through pressure, involves the nervous system. The trigeminus nerve, which supplies the teeth, can, because of its complexity, produce reflex effects upon remote organs. Since it is both motor and sensory and, also, since its many branches anastomose with various other nerves, it is not strange that remote conditions originate from disorders affecting this nerve. When the aforementioned inflammation occurs, the child is apt to refuse nourishment and become restless; and, if relief is not obtained, diarrhea, vomiting, convulsions, paralysis, and even death may possibly occur. Neuralgia and earache are also commonly caused by such inflammation.

"The above tells the same story without unnecessary verbiage. Nothing important has been left out except the sentence about what statistics show. Since the actual statistics are not stated, nor any citation given where the reader can find them, the statement is a weak effort at emphasis, so palpably weak as to discredit the other statements. Its omission, therefore, adds to the strength and clarity of the paragraph. The revised version, omitting 117 words, makes the paragraph clearer, more concise, and more understandable.

"*Prolixity* implies an excessive and wearisome attention to trivial particulars. It is not necessary to illus-

(*Continued on page* 528)

These are Peacetime Patients

How well will you be equipped to care for them?

The war has made it difficult or even impossible for the dentist to get all the equipment needed for full efficiency. We know the war isn't over, that a great many sacrifices are still to be made; but slowly, as the tide turns in the Allies favor, we all feel justified in looking ahead to better days, and planning for the postwar world.

The dentist, looking ahead to the patients of peacetime, will doubtless plan for x-ray equipment, and in the G. E. Model CDX dental x-ray unit he will find a modern, efficient diagnostic aid proved in peace and war.

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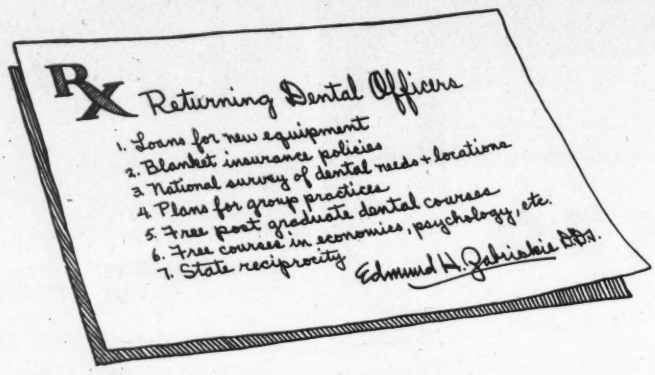

SEVEN WAYS TO SERVE THE HOME COMING DENTIST

Way back in March, Oral Hygiene started the discussion of postwar plans for returning dentists by publishing an article, "Plans for Postwar Days." W. Earle Craig, D.D.S., author of the article and creator of the plan outlined in the article—a plan already successfully in operation in Western Pennsylvania—received letters of commendation from dental societies all over the country. Many of the groups wanted to give similar concrete help to their returning members, and asked for samples of working material.

In the article "Seven Ways to Serve the Homecoming Dentist," Dr. Edmund H. Zabriskie presents an excellent sequel to the original article. Dr. Zabriskie's article is one which will furnish material for many a dental meeting, and will be much discussed by the dentists in civil life and the dentists in the armed services.

Out of these two articles— and those which are to follow in subsequent months—may come the plan which will ultimately be adopted by most of the dental societies of the country. Don't miss reading Dr. Zabriskie's timely, practical recommendations, for, in addition to the help which such a plan as he presents will give to returning dentists, it also foreshadows greater assistance for *all* dentists from their societies.

"So you Know Something About Dentistry!" is a new department (started last month) which seems slated to become as popular as "Ask Oral Hygiene" and Technique of the Month." Do you, offhand, know the answer to this one? "Does a tooth used as a bridge abutment have a wider periodontal membrane than an embedded tooth?" . . . Test your knowledge with this interesting quiz department.

"A New World Order for Dentistry" is not as formidable as the title sounds. The article is an open invitation to dentists in this country to provide teachers and practitioners for all of the war-ravaged countries. If travel and adventure appeal to you, you may take this article very personally.

You will not want to miss the results of the poll on the Army and Navy Dental Corps; the tribute to Horace Wells; the tale of the dentist who turned to the making of ingenious precision tools for use in industrial inspection; the regular departments; the editorial "Let's Think About Group Practice." You will find them all interesting.

In your Oral Hygiene *this month,* are all of the stories, articles, and departments described above. In your Oral Hygiene *every month* are all of the things you've learned to expect from Oral Hygiene editors . . . news, human interest, controversial discussions—material to suit every dentist's taste.

strate this 'aid,' for probably all of us can remember some teacher who delighted in its use. What we suffered in class should teach us not to inflict similar suffering on others in our professional writing. Sometimes this 'aid' is used in trying to pad or build up an article to a predetermined length. This is unwise, for to write with space requirements constantly in mind cannot help but have an adverse effect on the quality of the writing.

"*Diffuseness* is the opposite of conciseness and is an 'aid' employed to a remarkable degree in the writing and speeches of fence-straddling politicians. Diffuse writing is vague and verbose, filled with 'ifs,' 'ands,' and 'buts.' Like the politicos mentioned, it promises a lot but usually fails to deliver.

"*Circumlocution* denotes an indirect way of saying a thing. This particular 'aid' is probably used the least in dental literature. Nevertheless, its threat to good writing should be recognized and its assistance spurned.

"How can we teach ourselves to avoid using these seven 'aids' to poor writing? Reading in a critical vein will help a lot and, as we discover good and concise writing, we can study it and try to imitate it. Let us read the following paragraphs critically:

Facial-profile radiodontics is of primary importance in prosthetic dentistry, for it renders considerable assistance in fulfilling in a satisfactory manner both the technical and esthetic requirements that must be considered when the natural dentures are to be replaced by an artificial substitute.

Among the technical requirements are the selection of teeth of the proper size; the choice of the most appropriate base material; the establishment of correct articulation, with accurate centric relationship; stability of the dentures; and, finally, the education of the patient in denture mastery and hygiene.

The esthetic factors that should be considered are selection of teeth of the proper anatomical form, classification, and color; the establishment of a natural alignment of the anterior teeth; the reproduction of gold or silicate restorations and stains formerly present in the natural teeth; and the plumping out of the cheeks to their normal contour.

"As you study these three paragraphs you will find that none of the seven 'aids' are used. Take a pencil and try to find words you can cross

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out without changing the sense. You will find it most difficult. The language is concise; the choice of words excellent; the ideas are logically presented; and the style is easy to read.

"Another way in which we can avoid the aforementioned 'aids' is to work harder at our actual writing. Only a genius can write so that there is no need for rewriting and revision. Ordinary men, like the most of us, have to work hard to write well. When the young poet, Racine, sought the help of Boileau as a literary critic, he said, 'I ought to tell you that I write with great facility.' Boileau's response was, 'I hope to teach you to write with great difficulty.' Byron (a facile genius if there ever was one) is reputed to have said, 'Easy writing's damned hard reading.' One of the great masters of English literary style was Robert Louis Stevenson. He wrote and rewrote TREASURE ISLAND seven times before its language satisfied him.

"It is well first to write what you have to say, using all the words you want to use, and then to put the article aside for a week to cool off. As you reread it, you will find redundancy galore and many examples of the seven 'aids' to proper writing above referred to. You will probably think it is a pretty poor effort and feel like throwing it away. But don't do it, for having recognized its faults, you are on the way to correcting them. Rewrite the whole article. Study the article as a whole. It is surprising how often the best introductory paragraph will be found buried in the middle, or how often the introductory paragraph will make a better ending. Finally, go over the article sentence by sentence; strike out all redundancy; and make sure that everything you have said is clear and easy to understand. Then it is ready for publication.

"Do not be discouraged. Work hard for conciseness and brevity. Remember that the quality of an article is not measured by its length. Lincoln's Gettysburg Address was short (268 words), almost abrupt in places, but it delivered a message that will

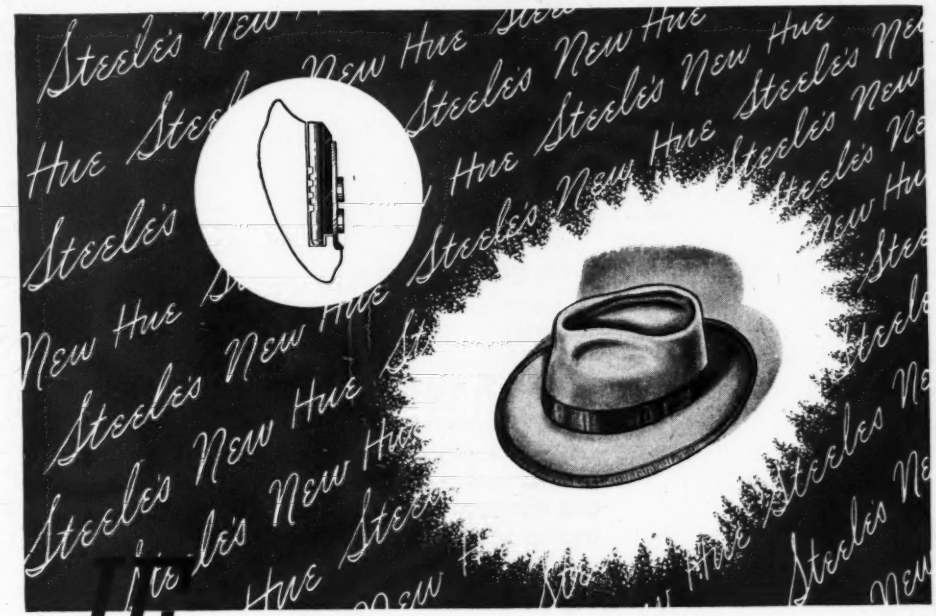
(*Continued on page* 534)

live for ages. Use no more words than you need, forego repetition, leave out unnecessary and wearisome details, and write straight to the point. Then your article will be read with interest and attention. And you will have the satisfaction of knowing that you have done something to help in the great onward march of dental progress."

Men Are That Way, Too . . .

Many of my friends who have reached the period in life euphemistically called middle age have begun to complain of vague and bizarre symptoms associated with loss of zest and pep and diminution in their masculine powers. In addition to their muscle moanings and joint squeaks, they sometimes complain of nervous and mental states of anguish and apprehension. They are likely to become pill addicts and self pulse-takers, or may develop an un-

(*Continued on page* 536)



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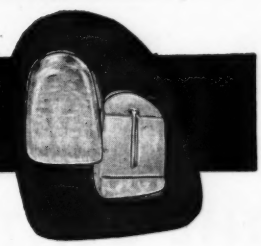

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wholesome interest in the blood pressure-recording apparatus. A few of the more hypochondriacal of these fellows I have chided as "sufferers from the change of life." They have everything except the hot flashes. Now I learn with chagrin that this diagnosis made in jest may, in fact, be a valid one. No less serious-minded person than an editorial writer in the *Journal of the American Medical Association*[2] has this to say about the male climacteric:

"More recently extensive debate among clinicians has concerned the validity of the concept of the male climacteric syndrome. Castration of male adults is apt to be followed by a group of symptoms essentially identical with those noted in women after removal of the ovaries or spontaneous menopause. Men who do not suffer surgical extirpation of the testicles may never experience such symptoms. Not infrequently, however, complaints of a similar character are made by men in any age from the third decade on. Whether this is to be attributed to testicular atrophy or failure of testicular secretion is the point in question. Many cases of such disorders have been treated with synthetic testosterone propionate or methyltestosterone, the latter being demonstrably active when administered orally. Satisfactory clinical improvement has been reported by several clinicians. Such success might possibly be attributed to the general stimulation of secondary sex characters by these substances or even to the increase in muscle tissue as well as in physical vigor produced thereby. However, the recent work of Heller and his associates from the Wayne University Medical School shows that there is an increase in the anterior pituitary gonadotropic hormone in the urine of men who have been castrated, of men whose testicles have atrophied, and of a group of patients who fit the concept of a male climacteric. This is analogous to the situation in the female. Therapy with androgenic materials has given distinct relief to these patients, fitting likewise the probability of the exist-

[2]Editorials: The Male Climacteric, J.A.M.A., **126**: 300 (September 30) 1944.

ence of the climacteric. Another group of individuals with somewhat similar complaints had rather indifferent benefits from the use of the androgen; they were shown also to be different in that there was no significant increase of the pituitary gonadotropic hormone in the urine samples investigated.

"The facts that are here cited serve to indicate with increasing probability that the male climacteric is just as truly a syndrome based on endocrine disturbances as is the menopause syndrome in women. Unfortunately objective means for making these differentiations are still limited to investigative clinics and hospitals."

From now on I will no longer chide my friends and contemporaries of middle years who are suffering from these pangs of the change of life. Among them are the stout fellows who have suddenly become conscious of diet, heart, elimination, or exercise. And their worries of other present and future weaknesses of the flesh are sad to hear!—E. J. R.

Penicillin Progress

AUSTIN E. SMITH, M.D., Chicago

THE NEED for further studies on the use of penicillin in dentistry is apparent. Its possibilities in the control of local tissue infections and more deeply seated pathologic processes, such as bone infections, remains to be determined. Unquestionably, penicillin has considerable lethal effect on many organisms in the mouth. The effect of the drug when applied locally, however, is modified by several conditions, and, when penicillin becomes more freely available, cognizance will have to be taken of each condition.

How much penicillin will be used by the dentist will depend on how much of his practice is surgical. He may have reason to use or propose the use of penicillin by injection and can expect considerable therapeutic help provided indicated surgical measures are also undertaken. The local use of penicillin undoubtedly will give less dramatic results than parenteral injection, but it may have a place in the local treatment of infection, and perhaps even in the prevention of infection. In its use as a preventive, from what can be gained from present studies, there is not so much possibility of local damage to the tissues as with the sulfonamides.

Until such time as current studies are completed and more penicillin becomes available for unrestricted use, the drug can be regarded only as a potentially useful agent in dental therapy. Even with the present knowledge, however, it is evident that members of the dental profession have one more agent with which to meet some of the more serious problems that arise in dentistry.

—From Summary of Report by the Council on Dental Therapeutics, *Journal of the American Dental Association*, 31:1388 (October 1) 1944.

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